REPORT RESUMES

ED 015 517 08 CG 001 202
VOCATIONAL PROBLEM-SOLVING EXPERIENCES FOR STIMULATING CAREER EXPLORATION AND INTEREST. FINAL REPORT.
BY- KRUMBOLTZ, JOHN D. AND OTHERS
STANFORD UNIV., CALIF., SCHOOL OF EDUCATION
REPORT NUMBER BR-5-0070 PUB DATE AUG 67
CONTRACT OEC-5-85-059
EDRS PRICE MF-$2.25 HC-$24.16 602P.

DESCRIPTORS- *OCCUPATIONAL INFORMATION, VOCATIONAL DEVELOPMENT, OCCUPATIONAL CHOICE, QUESTIONNAIRES, *CAREER PLANNING, *DISCOVERY LEARNING, LEARNING DIFFICULTIES, OCCUPATIONAL GUIDANCE, INFORMATION UTILIZATION, INSTRUCTIONAL FILMS, COUNSELING, RESEARCH PROJECTS, *HIGH SCHOOL STUDENTS,

TO MOTIVATE INTEREST IN CAREER EXPLORATION, FIVE SETS OF JOB SIMULATION MATERIALS WERE DEVELOPED AND TESTED FOR ACCOUNTING, X-RAY TECHNOLOGY, MEDICAL LABORATORY TECHNOLOGY, SALES, AND BANKING. EACH "CAREER KIT" PRESENTED PROBLEMS REPRESENTATIVE OF EACH OCCUPATION AND THE BACKGROUND INFORMATION NEEDED TO GUARANTEE THAT MOST SUBJECTS COULD SOLVE THEM. HYPOTHESES COMPARING PROBLEM-SOLVING APPROACHES WITH ALTERNATIVE APPROACHES WERE TESTED IN THREE STUDIES. IT WAS CONCLUDED THAT--(1) PROBLEM-SOLVING "CAREER KITS" CONSISTENTLY PRODUCED MORE INTEREST AND MORE OCCUPATIONAL INFORMATION SEEKING THAN CONTROL TREATMENTS, AND (2) SUBJECTS FROM LOWER SOCIO-ECONOMIC SCHOOLS CONSISTENTLY GAVE MORE POSITIVE REACTIONS THAN SUBJECTS FROM MIDDLE-CLASS SCHOOLS, PARTICULARLY IN RESPONSE TO THE PROBLEM-SOLVING MATERIALS. (AUTHORS/PS)

ED015517

BR-5-0070
PA 08

FINAL REPORT
Project No. 5-0070
Contract No. OE-5-85-059

VOCATIONAL PROBLEM-SOLVING EXPERIENCES FOR STIMULATING CAREER EXPLORATION AND INTEREST

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

August 1967

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

CG 001 202

VOCATIONAL PROBLEM-SOLVING EXPERIENCES FOR STIMULATING CAREER EXPLORATION AND INTEREST

Project No. 5-0070
Contract No. OE-5-85-059

John D. Krumboltz, Principal Investigator

Lawrence E. Sheppard
G. Brian Jones
Richard G. Johnson
Ronald D. Baker

August 1967

The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

School of Education
Stanford University

Stanford, California

TABLE OF CONTENTS

Page*

LIST OF TABLES ix

Pilot Study ix
Booklet-Mediated Study x
Film-Mediated Study xiii

LIST OF APPENDICES xv

Pilot Study xv
Booklet-Mediated Study xv
Film-Mediated Study xv

ACKNOWLEDGEMENTS xvii

ORGANIZATION OF THIS REPORT xix

ABSTRACT xx

PILOT STUDY

Chapter

I. THE PROBLEM g1

Objectives g1
Background of Proposed Study g1

Introduction g1
Social and Economic Changes g3
Practical Implications of the Study g3

Mounting Need for Guidance Services g4
Need for Early and Meaningful Vocational Guidance g4
Students' Need for Vocational Guidance g5

Theoretical Implications of Study g8

Related Research g8

General g8
Development of Interests g11
Relationship between Interest and Choice of Occupation g12
Effects of Experience on Interest g13
Relationship between Problem-Solving and Success g16
Relationship between Problem-Solving in Realistic Settings and Interest g18
Conclusions g19

Implications of Research for Improved Occupational Information g20

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Chapter Page*

II. RESEARCH DESIGN g25

Specific Objectives of the Investigation g25
Experimental Design g26
Subjects g29
Treatments g31

Problem-Solving Treatment g31
Accounting Information Treatment g32
General Information Treatment g33

Immediate Effects of Treatment g33
Criterion Measures g34

Interest in Exploring Other Occupations g34
Interest in Exploring Accounting g34
Instruments Used g35

Sequence of Events g36

Pre-Testing Session g36
Treatment Session g37
Student Requests for Interviews g38
Information-Seeking Activity g42
Confirmation-Invalidation Procedures g43

Preparation and Arrangements g49

Selection of Occupation g49
Preparation of Interest-Generating Materials . . . g50
Experimental Materials g51
Arrangements g52
Arrangements at the School g53
Research Team g58

III. RESULTS AND DISCUSSION g60

Data Analysis g60
Hypotheses Tested g61
Expected Outcomes g62
Interest in Exploring Accounting and Other Occupations and Favorable Attitudes Toward Accounting and Other Occupations g62

Rating of Specific Occupations g62

Interest in Activities Like Those of Accountants . . g70
Amount of Information-Seeking g72

Self-Report Listings by Students g72
Subjects Requesting Additional Occupational Information g72

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Chapter Page*

Examination of the Number and Kinds of Different Occupations for Which Subjects Requested Information g75
The Nature of Information Requested by Subjects During the Counseling Interview g82
Summary of Data Regarding Counseled Group . . g85

Conclusions g86

IV. SUMMARY AND IMPLICATIONS g89

Summary of Study g89
Results g91

Nature of the Sample g93
Research Personnel g94
Unexpected Variables g95
Treatment Groups--Experimental Material g96
Timing of Experiment g97
Criterion Measure g98
Counseled Subjects g99

Implications g99

BIBLIOGRAPHY g105

APPENDICES g110

BOOKLET-MEDIATED STUDY

I. INTRODUCTION y1

Problem y1
Related Research y6
Objectives and Hypotheses y14

Directional Hypotheses y14
Null Hypotheses y14

II. METHOD y16

Sequence of Events y16
Procedures y16

Selection of Occupations y16

Accountant y17
X-Ray Technician y18
Medical Laboratory Technologist y18
Salesperson y19

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Chapter Page*

Development of Experimental and Control Materials . y21

Problem-Solving Materials y21
Non-Problem-Solving Materials y24
Occupational Information Control Materials y24
Career Information Control Materials y24
Irrelevant Control Materials y24
Answer Forms y24

Subjects y25
Conduct of the Pre-Treatment, Treatment and Post-Treatment Sessions y26

Pre-Treatment Session y27
Treatment Session y27
Post-Treatment Session y28

Criterion Instruments y29

The Student Reaction Sheet y29
The Vocational Planning Questionnaire y30
The High School Vocational Survey y32
The Post Card y33
Library Lists y33
Counselor Lists y33

III. RESULTS AND DISCUSSION y35

Problem-Solving Treatment Vs. Non-Problem-Solving Control y35

Analysis of the Responses on the Student Reaction Sheet y36
Summary of Results for Student Reaction Sheet . . y43
Analysis of Responses on the Vocational Planning Questionnaire y45
Summary of Results for Responses to Vocational Planning Questionnaire y52
Analysis of Responses on High School Vocational Survey y53

Directional Changes in Interest Ratings According to Occupation y53
Summary of Results for Directional Changes in Interest Ratings y57
Absolute Changes in Interest Ratings for Each Occupation y57
Summary of Results for Absolute Changes in Interest Ratings y62

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Chapter Page*

Absolute Changes in Certainty Ratings When Interest Ratings Remained Unchanged y62
Summary of Results for Change in Certainty of Interest Ratings y69

Problem-Solving Treatment Vs. Occupational Information Control y70

Analysis of Responses on Student Reaction Sheet . y70
Summary of Results for Student Reaction Sheet . . y75
Analysis of Responses on Vocational Planning Questionnaire y76
Summary of Results for Vocational Planning Questionnaire y84
Analysis of Responses on High School Vocational Survey y85

Directional Changes in Interest Ratings for Each Occupation y85
Summary of Results of Directional Change in Interest y90
Absolute Changes in Interest Ratings for Each Occupation y90
Summary of Results for Absolute Changes of Interest y97
Absolute Changes in Certainty When Interest Ratings Remained Unchanged y97
Summary of Results for Change in Certainty Ratings y110

Utilization of Information Resources and Validity of Self-Report Data y111

Utilization of School Counselor Resources . . y111
Utilization of Library Resources y111
Post Card Request Data y112
Validity of Self-Report Data y112

Summary of Results y116

Student Subjective Reactions y116
Career Information Seeking y117
Changes in Vocational Interest y117
Utilization of Vocational Information Resources y118

Conclusion y118

BIBLIOGRAPHY y120
APPENDICES y123

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Chapter Page*

FILM-MEDIATED OCCUPATIONAL STUDY

I. PROBLEM STATEMENT, RATIONALE AND REVIEW OF THE LITERATURE w1

Problem Statement and Rationale w3

  Fundamental Problem Area w4
  Specific Problem Focus w9

    Vocational Exploratory Behavior w10

      Berlyne's Theory of Exploratory Behavior . . . w10
      Bruner's Exploration of Alternatives w14
      Relevance for Present Investigation w16

    Variables of Realism and Social Modeling w18

  Research on Effective Characteristics of Communication Media w22

    Type of Audience Participation w26

      Active vs. Passive Participation w27
      Overt vs. Covert Participation w32

    Relevant Stimulus Variables w36

      Programed Problems w36
      Knowledge of Correct Responses w39
      Incentive Factors w41
  Summary w45

II. EXPERIMENTAL DESIGN AND PROCEDURE w47

Specific Objectives w47
Statement of Hypotheses w49
Experimental Design w51

  Subjects w53
  Experimental Treatment Conditions w55

    E_1 Active-overt participation film w59
    E_2 Active-covert participation film w60
    E_3 Passive participation film w61

  Control Treatment Conditions w62

    C_1 Regular banking career films w64
    C_2 Printed banking career information w65
    C_3 Printed general career information w66
    C_4 Filler film/pseudo treatment w67

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Chapter Page*

Criterion Measures w67

Occupational Interest--Banking w69

The Project TALENT Interest Inventory w72
Job Interests List w73

Attitudes Toward Banking w73

Bank Attitude Questionnaire w73

Vocational Exploratory Behavior Inventory . . . w74

Experimental Procedures w77

Experiment Schedule w77
Testing Procedures w78
Treatment Administration Procedures w79
Statistical Procedures w80

III. RESULTS AND DISCUSSION w85

Experimental Results w86

Overall Main and Interaction Effects w87
Experimental vs. Control Treatments (Hypothesis A) w90
Active vs. Passive Film Participation (Hypothesis B) w93
Active-Overt vs. Active-Covert Film Participation (Hypothesis C) w95
Supplementary Data w99

Student Reactions to Treatments w99
Intercorrelation Matrix w102

Discussion of Results w105

IV. SUMMARY, CONCLUSIONS AND IMPLICATIONS w119

Summary w119

Rationale w119
Design w122
Results w124

Conclusions w127
Discussion w130
Implications for Further Research w134

BIBLIOGRAPHY w140

APPENDICES w147

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

LIST OF TABLES

Table PILOT STUDY Page*

1 Number of Subjects in Each Cell of the Experimental Design Who Completed the Experimental and Pre and Post Materials g27

2 Experimental Procedures and Sequence of Activities g28

3 Number of Student Reports Investigated for Confirmation and Information-Seeking g44

4 Adjusted Means, Standard Error of Adjusted Means, N's and Tests of Significance for Treatment on Item No. 12, Accounting, on the Vocational Survey g64

5 Test of the Mean Differences between Treatments on Item No. 12, Accounting, for Treatments on the Vocational Survey g64

6 Adjusted Means, Standard Error of Adjusted Means, N's and Tests of Significance for Males on Item 12, Accounting, on the Vocational Survey g65

7 Test of the Mean Differences between Treatments on Item No. 12, Accounting, for Males on the Vocational Survey g65

8 Adjusted Means, Standard Error of Adjusted Means, N's and Tests of Significance for Females on Item No. 12, Accounting, on the Vocational Survey g66

9 Adjusted Means, Standard Error of Adjusted Means, N's and Tests of Significance for the Counseled Group on Item No. 12, Accounting, on the Vocational Survey g66

10 Test of the Mean Differences between Treatments on Item No. 12, Accounting, for the Counseled Group on the Vocational Survey g67

11 Adjusted Means, Standard Error of Adjusted Means, N's, and Tests of Significance for Group not Requesting Counseling on Item No. 12, Accounting, on the Vocational Survey g67

12 Adjusted Means, Standard Error of Adjusted Means, N's and Significant Variables for Items Other than Accounting on the Vocational Survey g68

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Table Page*

13 Adjusted Means, Standard Error of Adjusted Means, and N's for Certain Variables Tested for the Total Accounting Score of the Kuder Preference Record--Form D g71

14 Means, Standard Deviations, and N's for Certain Variables Tested for the Total Score on the Student Questionnaire g73

15 Requests for Occupational Information by Counseled Subjects g76

16 Number of Counseled Subjects Requesting Information of Fewer than Two and Two or More Occupations by Treatment and Sex g78

17 Results of Chi-square Tests of Independence Comparing the Number of Counseled Subjects Requesting Information of Fewer than Two with Two or More Occupational Requests Each Treatment and Sex g79

18 Number of Counseled Subjects Requesting Specific and Non-Specific Occupational Information by Treatment and Sex g80

19 Results of Chi-square Tests of Independence Comparing Specific with Semi-specific and General Information Requested by Counseled Subjects g81

BOOKLET-MEDIATED STUDY

I Distribution of Subjects by School and Sex y26

(Problem-Solving Treatment and Non-Problem-Solving Control)

II Significant Probability Values for Main Effects and Interactions for the Problem Solving Treatment and Non-Problem Solving Control (Occupations Pooled) /Student Reaction Sheet Items/ y37

III Mean Scores for Significant Main Effects y37
/Student Reaction Sheet Items/

IVA-D Cell Means for Significant Interactions y38
/Student Reaction Sheet Items/

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Table Page*

V Significant Probability Values for Main Effects and Interactions for the Problem Solving Treatment and Non-Problem Solving Control [Vocational Planning Questionnaire] y46

VI Mean Scores for Significant Main Effects [Vocational Planning Questionnaire] y46

VIIA-H Cell Means for Signficant Interactions y47
[Vocational Planning Questionnaire]

VIII Significant Probability Values for Main Effects and Interactions for Mean Directional Change in Interest Ratings for Each Occupation: Problem Solving Treatment and Non-Problem Solving Control [High School Vocational Survey Items] y54

IX Cell Means for Significant Main Effects [Directional Change--High School Vocational Survey Items] . . y55

XA-C Cell Means for Significant Interactions [Directional Change--High School Vocational Survey Items] . . y55

XI Significant Probability Values for Main Effects and Interactions for Mean Absolute Change in Interest Ratings for Each Occupation: Problem Solving Treatment and Non-Problem Solving Control y58

XII Cell Means for Significant Main Effects [Absolute Change--High School Vocational Survey Items] . . y59

XIIIA-C Cell Means for Significant Interactions [Absolute Change--High School Vocational Survey Items] . . y59

XIV Significant Probability Values for Main Effects and Interactions for Absolute Change in Certainty Ratings When Interest Ratings Remained Unchanged For Problem Solving Treatment and Non-Problem Solving Control [High School Vocational Survey Items] y63

XV Cell Means for Significant Main Effects [Absolute Change in Certainty Ratings When Interest Ratings Remained Unchanged--High School Vocational Survey Items] y64

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Table Page*

XVIA-E Cell Means for Significant Interactions [Absolute Change in Certainty Ratings When Interest Ratings Remained Unchanged--High School Vocational Survey Items] y64

(Problem Solving Treatment Vs. Occupational Information Control)

XVII Significant Probability Values for Main Effects and Interactions for the Problem Solving Treatment and Occupational Information Control (Occupations Pooled) [Student Reaction Sheet] y71

XVIII Cell Means for Significant Main Effects [Student Reaction Sheet Items] y71

XIXA-D Cell Means for Significant Interactions [Student Reaction Sheet Items] y72

XX Significant Probability Values for Main Effects and Interactions for the Problem Solving Treatment and Occupational Information Control [Vocational Planning Questionnaire] y77

XXI Cell Means for Significant Main Effects [Vocational Planning Questionnaire] y77

XXIIA-H Cell Means for Significant Interactions [Vocational Planning Questionnaire] y78

XXIII Significant Probability Values for Main Effects and Interactions for Mean Directional Change in Interest Ratings for Each Occupation: Problem Solving Treatment and Occupational Information Control [High School Vocational Survey Items] y86

XXIV Cell Means for Significant Main Effects [Directional Change--High School Vocational Survey Items] y87

XXVA-C Cell Means for Significant Interactions [Directional Change--High School Vocational Survey Items] y87

XXVI Significant Probability Values for Main Effects and Interactions for Mean Absolute Change in Interest Ratings for Each Occupation: Problem Solving Treatment and Occupational Information Control [High School Vocational Survey Items] y91

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Table Page*

XXVII Cell Means for Significant Main Effects /Absolute Change--High School Vocational Survey Items/ y92

XXVIIIA-D Cell Means for Significant Interactions /Absolute Change--High School Vocational Survey Items/ y92

XXIX Significant Probability Values for Main Effects and Interactions for Absolute Change in Certainty Ratings When Interest Ratings Remained Unchanged For Problem Solving Treatment and Occupational Information Control /High School Vocational Survey Items/ y98

XXX Cell Means for Significant Main Effects /Absolute Change in Certainty Ratings When Interest Ratings Remained Unchange--High School Vocational Survey Items/ y99

XXXIA-J Cell Means for Significant Interactions /Absolute Change in Certainty Ratings When Interest Ratings Remained Unchanged--High School Vocational Survey Items/ y99

XXXII Number of Counselor Interviews by Independent Variable Category y112

XXXIII Number of Post Cards Received and Number of Ss Per Cell by Treatment, Sex and SES y113

XXXIV Number of Self-Reports of Post Cards Sent and Number of Post Cards Received within Time Limit y114

XXXV Number of Self-Reports of Post Cards Sent and Number of Post Cards Received Including Post-Follow-Up Returns y115

FILM-MEDIATED STUDY

1 Proposed and Actual Number of Subjects in Each Cell of the Experimental Design w53

2(a) Analysis of Covariance and Variance Results for Selected Variance Components from 7 Levels of Treatment, 2 Levels of School, and 2 Levels of Sex w88

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Table Page*

2(b) Main Effect Means from 7 Levels of Treatment, 2 Levels of School, and 2 Levels of Sex . . . w89

3 Analysis of Covariance and Variance Results for Selected Variance Components from 2 Levels of Treatment (Experimental vs. Control), 2 Levels of School, and 2 Levels of Sex w92

4 Analysis of Covariance and Variance Results for Selected Variance Components from 2 Levels of Treatment (Active vs. Passive Film Participation), 2 Levels of School, and 2 Levels of Sex w94

5 Analysis of Covariance and Variance Results for Selected Variance Components from 2 Levels of Treatment (Overt vs. Covert Film Participation), 2 Levels of School, and 2 Levels of Sex w97

6 Analysis of Variance Results for Selected Variance Components from Analyses of Student Reactions to Treatments w100

7 Intercorrelation Matrix, Means, and Standard Deviations for 11 Criterion Measures (Pre and Posttest Scores on the First 7) w103

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section' "w" for white section.

LIST OF APPENDICES

Appendix Page*

PILOT STUDY

A Forms in Experiment Requesting Subject Response g110

B Communications to School and District g125

C Instructions to Proctors g130

D Experimental Materials (Booklets photographed and slightly reduced in size)

BOOKLET-MEDIATED STUDY

A Forms Used in Criterion Measures . . . .

B Cell Means and Replications Per Cell for the Problem-Solving Treatment vs. Non-Problem Solving Control . . . .

C Cell Means and Replications Per Cell for the Problem-Solving Treatment vs. Occupational Information Control . . . .

FILM-MEDIATED STUDY

A Printed Insert for Booklet in Treatment Condition C_2 . . . . w147

B Instructions and Response Categories of the Project TALENT Interest Inventory w148

C Job Interests List w153

D Format and Scoring System for Bank Attitude Questionnaire w154

E Vocational Exploratory Behavior Inventory w156

F-1 Instructions for Testing Session #1 . . . . w167

F-2 Instructions for Testing Session #2 . . . . w169

G Instructions for Vocational Materials Session . . w171

H Student Reaction Sheet w173

---

*Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

Appendix Page*

I California Bankers Association--Banking Career Kit w174

J Script for the California Bankers Association Vocational Film. Version: Active-Overt Participation Film--"A Program for the Future: Careers in Banking: w178

K Careers in Banking--Student's Workbook w196

L Cell Means for Each Criteria in Each Experimental Design w202

---

* Page numbers preceded by "g" indicate page numbers in the green section; "y" for yellow section; "w" for white section.

ACKNOWLEDGEMENTS

Many people contributed their particular resources, talents and time to the conduct of this research project. The cooperation and planning by the administrations and faculties of the high schools involved in the research were essential to the execution of the project. In addition to the many teachers who accommodated the research personnel in their classrooms, the experimenters wish to recognize the following individuals:

Mr. Henry Jensen, Principal, and Mr. Al Alexander, Head of the Social Studies Department, Andrew Hill High School, San Jose, California

Dr. Scott Thomson, Principal, and Dr. William Hutchinson, Head Counselor, Cubberley High School, Palo Alto, California

Mr. Judson Taylor, Principal, and Miss Barbara Garfinkle, Sophomore Counselor, James Logan High School, Union City, California

Mr. Louis Harbor, Principal, William Overfelt High School, San Jose, California

Mr. Kendall Stanger, Principal, Lynbrook High School, Sunnyvale, California

Dr. Dale C. Burklund, Director of Guidance and Curriculum, Santa Clara County Schools, San Jose, California

Mr. Carl E. Bahmeier, California Bankers Association, San Francisco, California

Dr. Elizabeth Van Dalsem, Director of Guidance and Research Sequoia Union High School District, Redwood City, California

Mr. Philip Maslin, Principal, and Mr. Julian Polon, Head Counselor and Vice Principal, San Carlos High School, San Carlos, California

Contributing much personal time and talent to the development of the vocational problem-solving materials were the consultants, each a specialist in his field, who helped insure that the materials realistically represented the occupations. These consultants were:

Mr. James J. Walker, Business Education Instructor, Ravenswood High School, Sequoia Union High School District, Palo Alto, California

Dr. Steven Ross, Radiologist and staff member of the University of California School of Medicine, San Francisco, California

Dr. Robert Dennis, Pathologist and Director of the Clinical Laboratory at San Jose Hosptial, San Jose, California

Mrs. Alice Inami, Chief Medical Laboratory Technologist, San Jose Hospital, San Jose, California

Mrs. Marian Anderson, Chief X-Ray Technician, Stanford-Palo Alto Hospital, Stanford, California

Special appreciation is due to Mrs. Eleanor Worden who has served as Project Secretary. Mrs. Worden's skills in arranging schedules, handling financial details, typing booklets and manuscripts, answering questions and generally assuming responsibility for all undone tasks was essential to the success of this project.

THE ORGANIZATION OF THIS REPORT

The scope and complexity of the initial inquiries into vocational problem-solving experiences for stimulating career exploration require a comprehensible method of organization. This report may most conveniently be thought of as being composed of three related, but separate studies: a pilot study (green section), a study of booklet-mediated simulation (yellow section), and a study of film-mediated simulation (white section).

The contents of this report are organized in the following manner:

1. Combined table of contents for entire report.
2. Combined acknowledgements.
3. Combined abstract for the entire report.
4. Pilot study--Green section.
    - (a) text
    - (b) references
    - (c) appendices
5. Booklet-mediated study--Yellow section.
    - (a) text
    - (b) references
    - (c) appendices
6. Film-mediated study--White section.
    - (a) text
    - (b) references
    - (c) appendices

ABSTRACT

A major problem facing school counselors is how to help young people decide upon a vocational or educational goal when the knowledge and experience of these youths are too limited to provide a basis for judgment. Many young people either do not know how or do not desire to explore their interests and discover the alternatives available.

Most occupational information lacks appeal. Even when on occasion opportunities are made available to talk with or observe employed persons at their work, the young person still does not discover what it feels like to solve the problems of a particular occupation. Some more realistic experiences might help a young person evaluate whether or not he would like to engage in a particular occupation and motivate him to explore the alternatives. Actual job experience at a number of occupations would be ideal; unfortunately, providing such job experience would be prohibitively costly. Simulating such job experiences, however could be done at much less expense. The purpose of the three studies reported here was to develop and test job simulation kits which would be relatively inexpensive and which could be easily administered within the limitations imposed by the typical secondary school.

These studies developed and experimentally tested five simulated occupational experiences. Problem-solving experiences in accounting, medical laboratory technology, X-ray technology, and sales were developed and published in booklet form. The problem situations in banking were produced on film. The materials presented problems typical of those encountered by workers in the five occupations. The materials presented the information necessary to solve the problems, gave subjects an opportunity to solve the problems and allowed them to compare their answers with the correct ones. Finally the subjects were able to evaluate their performance by comparing their scores with a criterion score which indicated a successful performance in each of the five occupational simulations. The difficulty level of the problems was such that success was virtually guaranteed.

The simulated occupational problems were experimentally tested in three studies.

Study I: Pilot Study on the Occupation of Accounting

This study was designed to test the effect of a set of simulated occupational problems in accounting on the occupational attitudes and information-seeking of young people. It was hypothesized that eleventh-grade students who were given an opportunity to solve some simulated occupational problems in accounting would engage in more career information seeking and show more interest in accounting than would equivalent subjects given either information about accounting or general occupational information.

Subjects were 396 eleventh-graders. Approximately a month before and after the experimental treatment two instruments were administered to determine the degree of general and specific occupational interest.

The material for the three experimental treatments (accounting problem-solving, accounting information, and general information) were arranged in a random sequence and distributed to students in the required English classes. When all students had completed the experimental material, they were provided a form to request a counseling interview with a person trained in vocational guidance.

Within ten days after the experimental session, the students who had requested counseling were interviewed briefly. Records were kept of the nature and amount of information requested by students from each of the experimental groups.

Two weeks following the experimental treatment, structured interviews were held with all subjects in small groups. A questionnaire designed to elicit self-reporting of information-seeking after the experimental session was administered.

Results of Study I

1. Interest in accounting was increased by the problem-solving treatment, as hypothesized, but interest in 41 other occupations in the same list changed no more than would be expected by random fluctuation.

2. Of the counseled subjects, those who experienced the problem-solving material sought answers to questions involving a greater number and variety of occupations than did those subjects experiencing the general information material, but equal to those experiencing the accounting information material.

3. Of the subjects who requested counseling, those who experienced the problem-solving material requested occupational information of a significantly greater specificity, involving more long-term educational and career concerns, than did those who experienced the general information material but about equal to those experiencing the accounting information material.

4. The experimental treatment generated differential numbers of requests for information about accounting among subjects who requested counseling, but the experience with accounting did not inhibit, but seemed to stimulate, inquiries about other occupations as well. The subjects in the problem-solving treatment inquired about 34 different occupations; one of every eight inquiries pertained to accounting. The subjects in the accounting information treatment inquired about 25 different occupations; one of every seven inquiries pertained directly to accounting. The subjects in the general information treatment inquired about 25 different occupations; but none mentioned accounting.

Study II: Booklet-Mediated Simulation Study

Booklets for medical laboratory technology, X-ray technology, and sales were developed in three versions for each occupation: (1) Problem-solving: booklets in which subjects were required to solve problems representative of each occupation; (2) non-problem-solving: booklets which presented identical information as the problem-solving booklets but did not require subjects to solve problems; (3) occupational information: booklets which presented information on laboratory technology, X-ray technology and sales in the manner of occupational monographs typically used in vocational counseling.

Comparisons between the problem-solving and non-problem-solving treatments and between problem-solving and occupational information treatments were made using data collected from three self-report forms and three behavioral measures. Analyses were made of student subjective responses as recorded on the Student Reaction Sheet, amount of career information seeking as recorded on the Vocational Planning Questionnaire, and changes in vocational interests as reported on the High School Vocational Survey. The actual extent to which students used vocational information resources (counselors, library and post card requests for information) was also analyzed.

Subjects were 561 tenth-grade students, 245 boys and 316 girls. The subjects came from two high schools, an upper-middle-class school and a lower to lower-middle-class school.

The experimental and control treatments were randomly assigned to subjects, and analysis of variance was used to test the main effects and all interactions in the factorial designs which resulted.

Results of Study II

1. The problem-solving treatment produced more interest in working on similar booklets in different occupations than did either of the two control treatments.

2. Students who had worked with the problem-solving materials indicated more knowledge of what would be expected on the job and what it would feel like to work at a particular occupation than did students who worked with the non-problem-solving or occupational information materials.

3. Students in the problem-solving treatment reported writing more requests for occupational information than did those in the non-problem-solving treatment.

4. Students from the low socio-economic community generally responded more positively on measures than did those from the middle-class community.

5. More post card requests for information came from the problem-solving treatment groups than from control groups. This significant effect was largely accounted for by the high response rate of girls from the low socio-economic school.

6. Several significant interactions suggested that the problem-solving treatment might be particularly effective with subjects from the low socio-economic school.

Study III: Film-Mediated Simulation Study

The seven treatment conditions included three experimental and four control groups as follows:

Experimental Groups

Active-overt participation film--presents five problems from five bank jobs and stops five times while viewers select their problem solutions and record these in workbooks where the problems are printed.

Active-covert participation film--presents same content but viewers "think about" their responses to the problems which are presented on the screen. Response times are the same as in active-overt participation film, but the film is not stopped.

Passive participation film--same content as the active-overt and active-covert participation films, but no problems are presented.

Control Groups

Regular banking career films--standard occupational films without problem-solving or audience-participation.

Printed banking career information--printed booklets for high school and college graduates. Subjects were encouraged to look for answers to specific questions.

Printed general career information--printed booklet aimed at stimulating students to explore vocational opportunities. Interest-generating questions were presented.

Filler-film/pseudo treatment--contains science education content unrelated to purposes of other treatment materials. No audience participation was involved.

Procedure

A total of 270 subjects, 132 males and 138 females, were randomly assigned to the seven treatment groups within each of the two schools, resulting in a 7x2x2 complete factorial experiment with unequal replications within cells. Criteria included expressed and inventoried interests in banking occupations, attitudes toward banking, and vocational exploratory activities. Subjects' reactions to the treatment materials were also obtained. All data were analyzed by three-way analysis of covariance and analysis of variance methods.

Results of Study III

1. Subjects who viewed the experimental films showed higher interest (expressed and inventoried) in banking occupations and more favorable attitudes toward banking than did comparable control subjects who were presented with a variety of other materials. Subjects' personal reactions to the treatment materials supported this conclusion.

2. Subjects who were asked to make decisions on a series of banking problems at various points during the experimental films evidenced higher interest (expressed and inventoried) in banking occupations than did comparable subjects who watched a virtually identical film not requiring this active participation.

3. Subjects who were asked to record their decisions in booklets during one version of the experimental film did not differ significantly on any of the dependent variables from comparable subjects who were asked to "think about" their decisions. However, there were consistent but non-significant trends for the overt responders to display higher interest (expressed and inventoried) in banking occupations as well as more favorable attitudes toward banking. The overt responders engaged in more vocational exploratory activities during the month following treatment than did the covert responders.

4. Subjects in a high school from a less economically-privileged neighborhood showed higher inventoried interest in banking occupations than did subjects from a suburban, middle-class school.

5. Female subjects evidenced higher inventoried interest in banking occupations and one month later reported more vocational exploratory activities than did male subjects.

6. Several significant interactions suggested that certain of the treatments might have differential effectiveness for various subpopulations, but confirmation by subsequent research will be required to substantitate these interactions.

Conclusions

Two conclusions are apparent from the results of these three studies:

1. Problem-solving "career kits" consistently produced more interest and more occupational information seeking than control treatments.

2. Subjects from lower socio-economic schools consistently gave more positive reactions than subjects from middle-class schools, particularly in response to the problem-solving approaches.

PILOT STUDY

CHAPTER I

THE PROBLEM

Objectives

In an effort to find ways of motivating young people to take advantage of job training opportunities, to continue their educations, to see the world of work as a set of intriguing problems, and to explore their own career potentialities, it was proposed that a lifelike problem-solving experience related to a particular occupation be constructed and tested. It was hypothesized that eleventh-grade students who are given an opportunity to solve some simulated occupational problems will engage in more interest-indicative activities than will equivalent subjects given either information about these same occupations or general occupational information.

This research study was designed to test the effect of three treatment procedures, described in detail in the chapter, "Research Design," labeled (1) Problem-solving, (2) Occupational Information, and (3) General Information.

Background of Proposed Study

Introduction

The process of choosing an occupation is too important to be left to chance. The financial product of a man's work provides him and his family with the means to maintain health, rear the children, fulfill obligations to society, and purchase comforts.

The professional choice affects his creative interests, his sense of accomplishment, and his general well-being. Grant Venn (1964) expresses his concern regarding this process, stating:

> Job selection in the technological work world has become a desperate affair, often subject to wildest chance and equally often unrelated to the young job seeker's aptitudes and abilities. Many young people are unaware of the range of occupations, have had little opportunity to observe work in its setting... thus intelligent transition into the world of work becomes all the more difficult and vocational guidance all the more essential.

Robert M. Hutchins (1964) writes that "It seems unlikely that any form of vocational or technical training can help give significance to life on the assembly line." He adds this important qualification:

> Such significance could be achieved only by understanding the processes through which the worker was going, through understanding the relation of those processes in which other workers were engaged, and through understanding the significance of the product in the economic and social situation.

Hutchins (1964) also suggests that although it is possible to leave decisions to chance in education, the result is a "custodial" system:

> Of course a custodial system is possible without a philosophy of education or any other kind of philosophy. A custodial system may be regarded as the efflorescence of a society's despair that it can make no rational and coherent statement about the type of man that it wants to produce. It therefore decides to leave the matter to chance, providing harmless accommodation and occupation for the young until they reach maturity. This, I should be careful to point out, is an entirely different thing from saying that the kind of man we want is one who can think and act for himself and that therefore we

> are going to let him learn from himself while the educational system does little more for him than keep him out of harm's way.

Social and Economic Changes

Many social and economic factors have increased the need for effective vocational guidance. Increasing changes in population size, shifts, age groups, needs, and mobility must be recognized. Not only is the overall population growth explosive, but an increasing percentage is over 65 or under 20 years of age; the non-productive age groups are increasing while the most productive are becoming relatively small. In the 1950's, 85% of the total population increase occurred in cities of 50,000 or over and in their surrounding suburbs. More people are living and working closer together and traveling greater distances to work.

Industrial changes are marked. The small shop is disappearing. The emphasis is increasingly on absentee ownership, credit purchases, automation, team operation, and, in general, a steady increase in specialization and technological development. Perhaps the most fundamental result of this trend toward bigness is that the successful worker of tomorrow will have to be highly educated and trained (Baer and Roeber, 1958).

Practical Implications of the Proposed Study

While it becomes increasingly vital for schools to meet successfully the problems brought about by the rapidly increasing changes in our culture, the school themselves are facing increasingly frustrating problems.

Mounting Need for Guidance Services

Steadily increasing school enrollments are complicating the already mounting need for guidance services to provide students with more effective aid in development of occupational choice. Wood (1962) states:

> According to the most recent estimates by the Office of Education, enrollments in grades 9-12 will mount from 8.9 million in 1958-1959 to nearly 12.5 million in 1964-65, an increase of about 40% in only six years.
>
> . . . .
>
> Will there be room for these young workers in the usual types of starting positions? The growth in employment in entry positions is not expected to be as great as the rise in the number of young workers. Thus, there will probably be competition among young people for jobs in many occupations and geographical areas and need for them to move as rapidly as possible into positions normally staffed by older persons. A shortage of men workers in the middle age group will aid their advancement into higher-level jobs during the coming decade.
>
> It appears that young men with the necessary training and personal qualifications can look forward to unusually good opportunities for advancement. But they will have increased need for education and training to prepare them for advancement; and an intensified need for up-to-date information on employment prospects in different occupations, on education, and other requirements for entry positions and promotions ... as well as for counseling services to guide them in using this information and making career choices.

Need for Early and Meaningful Vocational Guidance

"It is a shocking fact," states Wimmer (1959), "that approximately 20% of our boys and girls are not even attending high school." According to the Fund for the Advancement of

Education; many fewer, about 30%, go on to college. Of the brightest boys and girls, those whose intelligence rank in the top 25th percentile, only about 40% go to college. And 20% of these youngsters of superior ability do not finish high school. Meaningful occupational and educational guidance should be provided our children as early as possible.

Krumboltz (1964), who is concerned with the relationship of the drop-out problem and the factors involved in occupational choice, states:

> If potential drop-outs from high school were able to develop sufficient interest in an occupation which required them to obtain an adequate education, the probability of their dropping out of school prematurely would decrease. A continuing concern in our society has been the high rate of school drop-outs. Efforts have been made to counsel and encourage students to complete their education ... Automation and the increasing skill requirements for the work forces make it increasingly necessary that some way be found to interest potential drop-outs in learning.

Students' Need for Vocational Guidance

"Problems of vocational choice and related educational plans rank high in any enumeration of worries and problems by adolescents," according to Mooney (1942). Peters (1963) reports that student job preferences lack realism, consistency, and understanding of availability of jobs. Schmidt and Rothney (1955) report the instability of expressed vocational preferences of students as they move from one grade in high school to another and into their first year after school; only 49% of the preferences of the 10th grade remained the same in the 11th grade, and this figure was reduced to 35% in grade 12 and then to 24% in the year following graduation.

Hahn (1955) reports the following common vocational problems of high school students:

1. Uncertainty about vocational choice. Many students will be uncertain as to vocational planning; some will be be indifferent and stress a 'don't care' attitude; others in this category will be students of high ability who can succeed in many fields. The average adolescent experiences discomfort about his future, shows some anxiety regarding his vocational goals, and reveals a considerable number of mixed feelings about the outcome.

2. No choice of an occupation. Among the high school population, many are so confused by the thousands of jobs available to them that they are unable to choose any in which they may find satisfaction. Some students find the societal pressure for an early decision of an occupational area adds to their problems and complicates their choices. Experienced counselors know that students vary greatly in readiness to choose a life work.

3. Inappropriate vocational choice. Students make inappropriate choices of vocations in a variety of ways: disparities between measured interests and abilities, between abilities and levels of occupations chosen (which may be too high or too low) or between abilities and interests that may be aptly geared together but out of line with personality structure, emotional pattern, social skills, etc. The average student believes that somehow, his dreams will come true. He often fails to examine the probability of his wishes becoming reality.

Another indication of students' need for vocational guidance is inferred from counselors' reports of the kinds of problems students bring to them. Kitch (1951) reports a rank order with most important student need first, as follows: (1) Adjustment to schoolwork, (2) The future: education, (3) The future: vocation, (4) Home and family, (5) Personal: psychological, (6) Social: psychological, (7) Finances: living conditions and employment.

The results of several other studies of youth's vocational development (Peters and Shertzer, 1963) indicate:

1. Many pupils choose from a narrow range of occupations.
2. A larger proportion of students aspire to enter the professions than actually enter.
3. Many students select occupations either above or below their ability as measured by psychological tests.
4. As many as a third of the students in high school are unable to indicate a choice of occupation.
5. There is a dearth of student information about earnings, requirements, and opportunities in various occupations.

All young people need to test their own reactions to the tasks required by various occupations. Young people who have no idea of a vocational choice are one of the greatest problems of school counselors.

Theoretical Implications of Proposed Study

The basic theoretical question is this: What are the factors causing a person to enter an occupation? This aspect of adolescence has attracted much theoretical and research attention in recent years. A number of interesting and valuable studies have been conducted to examine interest, personality, family, socio-economic, and experience factors correlated with various occupational interests. However, almost all these studies have been either descriptive or correlational. They are valuable in suggesting causative factors, but the very nature of correlational studies precludes an inference of causation.

This study is an experimental investigation in which experiences are designed and randomly assigned to students. In this way assertions with a known probability of error can be made about the extent to which certain specifically described experiences cause young people to become interested in certain defined occupations.

Related Research

1. General

Kuhlen (1960) states:

> In contrast to older views in which the making of a sound vocational choice was considered a somewhat intellectualistic process of matching personal assets with job requirements, the current emphasis is upon vocational development and eventual decision as a long-evolving process placed squarely in the context of total personality development and need structure.

Super (1953) outlines ten propositions for a comprehensive theory of vocational development in which he documents by his own research work as well as that of important theorists such as Ginzberg, Kitson, Paterson, Darley, Hoppock, Davidson, Strong, Terman, and others. The four propositions most directly pertinent to this study are as follows:

1. The nature of the career pattern (that is, the occupational level attained, and the sequence, frequency, and duration of trial and stable jobs) is determined by the individual's parental socio-economic level, mental ability, and personality characteristics, and the opportunities to which he is exposed.

2. Development through the life stages can be guided, partly by facilitating the process of maturation of abilities and interests, and partly by aiding in reality testing and in the development of the self-concept.

3. The process of compromise between individual and social facts, between self-concept and reality, is one of role-playing, whether the role is played in fantasy, in the counseling interview, or in real life activities such as school classes, clubs, part-time work, and entry jobs.

4. Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits, and values; they depend upon his establishment in a type of work, a work situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences have led him to consider congenial and appropriate.

This project, consistent with Super's propositions, offers the subjects a lifelike, problem-solving, role-playing experience of an occupation, thus providing the opportunity to judge their choices without actually being on the job.

Hoppock (1957) has also listed a number of theories of vocational choice and development. He comments as follows regarding the individual's vocational decision-making:

> When the chips are down, he and he alone must make a vocational choice -- to accept or to decline. Whether this decision is good or bad will depend in part upon the accuracy and adequacy of the information which he has about the occupation under consideration.

In discussing the eighteen theories of occupational choice which he describes, Hoppock concludes that all the theories have "explicit agreement on the necessity for reality testing as a part of occupational choice."

At present, according to Holland (1964), there are five major research programs concerned with vocational behavior: (1) Super's work on vocational development at Columbia University; (2) Tiedeman's work on career development at Harvard University; (3) Roe's work on vocational choice at Harvard University; (4) Holland's studies of vocational behavior at the National Merit Scholarship Corporation, and (5) Flanagan's studies of vocational behavior at the American Institute for Research. All five of these major programs of research are correlational studies designed to relate vocational behavior to other data collected at the same or an earlier time. None of them involves experimental controls. In his critical evaluation of these programs Holland states that "the goals of all major research programs are unnecessarily ambiguous and they even tend to vacillate from time to time" and that "most of the empirical research has been done with atypical samples (eminent scientists, National Merit finalists, and Harvard students), or with samples so small that actual predictive studies of choice or career pattern are not feasible (e.g., Super's career pattern study)."

Unfortunately, only descriptive or correlational evidence can be applied to the question, "What are the factors which influence occupational choice?" We can describe the traits, characteristics, and current behavior patterns of people currently engaged in each of a number of occupations and we can relate stated interest in these occupational areas with reported or observed traits and behavior at earlier periods of time, but such descriptions and relations do not enable us to make a conclusive assertion as to what caused the interest to develop originally.

2. Development of interests.

Tyler's (1955) study of the development of interests indicates differences in interests of boys and girls. She hypothesizes that interest patterns result from the development of dislike of many activities by both boys and girls who originally had a liking for the same activities. Further, it is the general interest in sexually-determined activities, in work, and in aggression rather than specific similarities between activities that seems to determine interest patterns in children.

That expressed interests change significantly during the high school years is the conclusion of Berdie (1944), Carter (1944), Fryer (1931), and Super (1949). Carter, in a ten-year review of studies concerning vocational interests, concludes that "apparently the greatest changes take place between the ages of 15 and 25 years ..." Berdie, in his review of the literature, comes to the same conclusion. Fryer, after summarizing a number of investigations, concludes that the data regarding the degree of permanence of interest indicates about a 55% chance that the estimate of vocational interest in any of the four high-school years will be the same the subsequent year. Super also reviews other research and comes to a similar conclusion.

Schmidt and Rothney (1955), in a follow-up study of students from their sophomore year in high school to six months after graduation, confirm this view. During their high school years, approximately half the students were inconsistent in their choices at a time when such choices may have influenced their subjects.

3. Relationship between interest and choice of occupation.

The most thorough investigation of the correlation of early interest and vocational choice is Strong's (1955) long-term study of 663 male Stanford students who completed the Vocational Interest Blanks as undergraduates and were followed up eighteen years later. Results showed that there were 78 chances in 100 that a man with an "A" rating in an occupation would be found engaged in that occupation eighteen years later; there were only 17 chances in 100 that he would be engaged in an occupation in which he had made a "C" rating.

4. Effects of experience on interests.

Matteson (1955) prepared a 200-item activity checklist to which college students responded on the basis of experience and interest. For eight of the ten interest-experience areas, correlations between amounts of experience and amount of interest were greater than .40. Later Matteson found a Rho coefficient of .38 computed from the rank differences of the respective gains of interest and experience in the ten areas. Categories showing the greatest gain in interest tended to be those showing the greatest gain in experience. It should be pointed out, however, that the precise nature of these experiences (that is, whether they involved success or failure, satisfaction or frustration, participation or observation, etc.) was not considered.

Evidence that interest and experience are correlated is provided by Bordin and Wilson (1953), who found that curricular shifts were accompanied by changes in Kuder profiles. The proposed experiment will explore this indication that experience and interest are positively correlated by investigating the precise nature of an experience that may generate interest.

In studying the effects of experiences of success -- reinforcement -- Plowman and Stroud (1942) found that most students cannot evaluate their own responses without help and need reinforcement in order to confirm correct or appropriate responses. For example, one group of students received its corrected test papers and was given five minutes to go over them. The second group did not have its papers returned. One week later the students were retested. The results, although leaving unmeasured the effect of practice, indicated that students who were given the opportunity to inspect their papers scored considerably higher on the same test than did those who did not inspect their papers.

Sears (1940) measured levels of aspiration in academically successful and unsuccessful children in the intermediate grades of elementary school. She divided them into three groups defined by their degree of success in school evidenced by their grades and how they felt about their school experiences. Given the same tasks, half were told they were successful, and half, that they had done poorly. Under success conditions the level of aspiration tended to correspond realistically with the performance level of the child. Under failure conditions there were large discrepancies between performance and level of aspiration. In general, the children under failure conditions had a larger range in their estimates of their expected performance than did the children under success conditions.

Klausmeier (1961) summarizes the conclusions of studies concerning level of aspiration of Sears, Byers, and Child and Whiting in the following five statements:

> 1. Success generally leads to raising the level of aspiration; failure, to a lowering.
>
> 2. The stronger the success, the greater is the probability of a rise in the level of aspiration; the stronger the failure, the greater is the probability of a lowering.

3. Shifts in the level of aspiration are in part a function of changes in the subject's confidence in his ability to attain goals.

4. Failure is more likely than success to lead to withdrawal from goal-setting.

5. Effects of failure on the level of aspiration are more varied than are effects of success.

The relation between interests and success in occupations has been intensively treated by Super. His conclusions, drawn from a summary of studies (Harris, 1960), are the same for educational achievement: interest is moderately related to success. Super states:

> When factors such as aptitude and extraneous motivation are uncontrolled, interest has little or no relationship to vocational success. When these other factors are held constant, as when the range of ability is limited or extraneous motivation is generally equal, and when the activity is such that its congeniality can affect application or industry, interest motivation is moderately related to success.

Among the studies he cites to support this are Terman's studies of gifted persons in which the least successful group of the 627 intellectually gifted men included five times as many men with low interest scores in their occupations as did the most successful group. Terman (1947) suggested that "Few men are very successful who score low in the occupation in which they are engaged."

A number of other studies involving either Strong's Vocational Blank or the Kuder Preference Record show a relationship between interest and success. For example, Barnette (1951), following up 890 veterans who took the Kuder while being counseled, found that successful engineers, salesmen, clerical workers, and accountants made high scores in fields of interest appropriate to their occupations, while those who failed made low scores in those same fields.

5. Relationship between problem-solving and success.

Lantz (1945) studied the dynamic aspects of success and failure in a problem-solving situation on children's intelligence-test performance. The children were placed within a barrier, and the problem was to reach a ball placed outside the barrier with the tools that were provided. Two groups resulted -- a success and a failure group. It was found that success significantly increased the average scores on the I.Q. tests; failure significantly depressed the scores; that successful children were rated significantly higher on such characteristics as self-confidence, social-confidence, cooperation, alertness, friendliness, boldness, talkativeness, cheerfulness, quietness, persistence, and effort. This study, however, being correlational in nature, lacked essential experimental qualifications for generalizations to be drawn.

Keister (1943) in studying the behavior of children in failure found that the effects of failure are likely to be reduced if students work on problems within their capacities and for which they have appropriate information and skills; that success in solving the easier problems probably encourages interest and adaptive behavior; that a period of preparation in which relevant information and skills are acquired will probably facilitate attempts to solve problems, and that the effects of failure are likely to be minimized if students are presented with problems graded in terms of difficulty.

Her experiment was one in which children were presented problems at which they had already failed. Some of them were put through a training program designed to improve their problem-solving ability by encouraging them to persist. The training program was built on the principle that a child can meet failure in an acceptable and controlled manner if he has learned from experience the kinds of behavior likely to bring success or satisfaction to him. Specifically, the training program was designed to teach the child to persist even when the task was difficult, to depend less on help from adults, and to give fewer excuses for his failures.

The training program began with a series of simple puzzles, similar to those on which the children had originally failed and which required a minimum of persistence. The series gradually became more difficult and, as they worked, the experimenter encouraged the children and rewarded successful responses.

The trained group showed greater persistence, greater interest, and less rationalization than it had immediately before the training period, whereas the nontrained group performed about the same as it had during the original experiment.

6. Relationship between problem-solving in realistic settings and interest.

"Problem-solving," McDonald states "is learned when students have "Genuine problems that motivate flexible and adaptive goal-seeking behavior." He cautions, however, that

> Realistic problems have not been found to induce more effective problem-solving, but the amount of experimental work on this problem is limited. Problem-solving in more realistic settings may have greater transfer value, but this hypothesis also needs to be tested more adequately.

Lorge (1955), as a result of his study pertaining to solution of a field problem at different levels of reality, states that

> Problem-solving in realistic settings probably has some advantages, such as inducing greater interest. The more realistic the problem, the more similar conditions are to the actual situation as the student may meet it. The more lifelike kind of problem may have greater transfer value to 'real life.'

Laird and Cumbree (1952) in an experiment in modifying ethnic attitudes of college students, found that when procedures requiring greater personal involvement are used, attitude changes are more likely. However, they caution that the relationship between information obtained and attitude change has not been adequately clarified. The common assumption at the present time is that if attitudes have not been strongly formed, information relative to the attitude object will be influential in affecting formation and change of attitudes.

One of the few experimental attempts to generate interest was reported by May and Lumsdaine (1958). They found that showing the movie of a novel did not necessarily cause students to take that book out of the library, but showing just a few interesting episodes did increase the number of students withdrawing the book. Perhaps, presenting just a few interesting problems of an occupation and allowing students to try their hands at solving them will motivate students to engage in a more extensive exploration of new experiences.

7. Conclusion.

This review of the literature makes clear that no particular experience can be shown to generate a particular occupational interest. The need for experimental investigations of factors which cause young people to become interested in certain occupations is strongly indicated. As stated above, almost all the studies have been either descriptive or correlational and hence cannot identify causes. With this qualification, the following is a summary of some inferences which may be drawn from prior research in the area of vocational choice:

1. Expressed interests change significantly during the high-school years.
2. Experience appears to have some relation to interest although the data suggest that experience must have its effects early in life.

3. Interest appears to be moderately related to success.
4. There are mixed indications regarding the influence of problem-solving, but there does not appear to be sufficient evidence to draw any conclusions.
5. In all the eighteen major theories of occupational choice, the one factor agreed upon is the necessity for reality-testing as a part of occupational choice.
6. The current research emphasis is upon development of vocational choice as a long-evolving process which may be viewed as involving role-playing and role-testing. The proposed line of research is experimental exploration of some of the factors believed to cause development of occupational interests.

Implications of Research for Improved Occupational Information

Brayfield (1948) writes that the purpose of occupational information is threefold: (1) Informational, (2) Readjustive, and (3) Motivational.

Baer and Roeber (1958) use a similar but longer list of purposes: (1) Exploratory use, (2) Information use, (3) Assurance uses, (4) Motivational uses, (5) Holding use, (6) Evaluative use, (7) Startle use.

Although few educators would argue with the purposes of occupational information listed above, quite a few believe that the information now available is not fulfilling these purposes.

Sinick (1961) and Baer and Roeber (1958) point out that only a small proportion of vocational materials are based on research findings and that it is doubtful whether these materials can really be accepted as effective until research findings are available. "How can we produce occupational information materials," Baer and Roeber ask, "that better meet the needs of the counselor and that he can relate to psychological and other information about his counselees?"

Pritchard (1962) finds another fault with today's materials:

> Leading textbooks on 'occupation information' offer little or nothing on how to incorporate such elements of the affluent society, leisure values, new patterns of work careers, a broadened frame of reference into counseling.

Samler (1961) is concerned with the relative "insulation" of occupational information and questions the

> ... Reality of the picture that emerges for the client after available information is studied .... We look in vain for a dynamic appreciation of work in terms of the individual's role, his self-concept or identity, the exercise of his attitudes and fulfillment of his values, status consideration, and other related factors.

Barry (1962) argues that the presentation of occupational information is based on "outmoded concepts of how students learn and make decisions," and on the following false assumptions:

1. Generalized formal information is authentic, realistic, and factual;

2. Specific information about the world of work is valid for and applicable to the future or other localities;

3. Such information meets students' needs and produces important learning;

4. Such information furnishes the basis for reasoned decisions.

What form, then, should the presentation of occupational information take? The application of the descriptive, correlational, and experimental data we now have demands a new orientation for most counselors. This redirection of effort has been taking place, but it has been handicapped by the limitations of the techniques currently available.

Pritchard (1962) attempts to sum up the thinking of many writers today and offers four directions for progress:

> 1. We must seek to obtain, develop, and use occupational tools sensitive to the expanded kinds of variables, occupational as well as personal, identified as significant to vocational development, success, and satisfaction.
>
> 2. Occupation exploration should generally give precedence to the broader and longer view of progressive vocational planning over the more limited view of a one time final occupational choice. The perspective must shift from 'the life-long choice' to the long term 'process and choosing' .... It must help the individual to become aware that both he and occupations have been and will continue, changing and 'choosing.'
>
> 3. Self-exploration and occupational exploration should become more fully correlative processes .... 'Bridges' between individual counselees and vocational life, must, if they are to be

psychologically meaningful, rest on dynamic as well as factual grounds. They must be largely self-created, not 'found' in predetermined, generalized classification systems. They must be 'personalized' or 'custom-tailored,' rather than 'ready made.'

4. The systematic search for positive vocational suggestions should be based on the particular kinds of personal-vocational factors and relationships explicitly hypothesized as significant in the individual case and should contribute to the modification and verification of these hypotheses.

Paulson (1960) points out that occupational information must have personal meaning to the student, helping him to get a clearer picture of himself and of his opportunities. A major reason for introducing the information is to stimulate motivation. He must participate in the process himself in order to gain a sensitivity to the variety of opportunities for himself.

Rusalem (1954) says that the "facts" about an occupation are no more important than the counseling client's perception of these facts, his attitudes and feeling toward them. Occupational information "needs to be perceived as a student's feeling about an occupation as a result of his contact with it." Hummel (1954) states that "occupational information will have meaning only in the sense that the individual perceives its relation to his emerging goals and value systems."

Vocational orientation programs today, too often give the student what Samler (1961) calls the "one-dimensional" picture of man -- that of Economic Man. It is a picture that has little to do with the full reasons why occupational choices are made or how they are made. Super (1957) states:

> Orientation must have meaning. In many occupational orientation programs, information has been broadcast at students on the assumption that they would assimilate it, store it away, and use it as needed. Such practices violate all that we know about learning, which takes place in response to a felt need and to the satisfying of that need. This is why studies evaluating vocational programs (Froehlich, Hoyt, Stone) have generally demonstrated the relative ineffectiveness of purely information-giving programs. They have proved effective only when focused on the felt needs of the students or employees, and are best when combined with individual counseling.

The present study will attempt to test experimentally a method of increasing student interest in vocational exploration. The occupational material will be developed taking advantage of past findings regarding occupational information and of the thinking of present-day writers in the field. It will be presented as a life-like occupational problem written to appeal to the intrinsic interest of the majority of the target population; it will be worded simply, clearly, and attractively; its whole format and content will be directed to give a sense of personal meaning and involvement to the student; it will attempt to provide an experience of success and satisfaction, and it will be based on a problem-solving approach rather than the usual information-giving material now available.

CHAPTER II

RESEARCH DESIGN

Specific Objectives of the Investigation

The purpose of this study was to find ways of motivating young people to take advantage of job-training opportunities, to continue their educations, to see the world of work as a set of intriguing problems, and to explore their own career potentialities. It was proposed that a lifelike problem-solving experience related to a particular occupation be constructed and tested. It was hypothesized that eleventh-grade students who were given an opportunity to solve simulated occupational problems would engage in more activities indicative of interest in those occupations than would equivalent subjects given either information about this occupation or general occupational information.

The following directional hypotheses were tested:

1. Students given an opportunity to solve simulated problems connected with a particular occupation will engage in more interest-indicative activities relevant to that occupation than control students.
2. Students given an opportunity to solve simulated problems connected with a particular occupation will engage in more interest-indicative activities relevant to

that occupation than will equivalent subjects given descriptive information on that occupation.

Experimental Design

Subjects in the eleventh grade of the high school were assigned at random to each of the three treatments (Problem-solving, Accounting Information, and General Information) in the experimental design. The main effects evaluated in the analyses were treatment, sex, and counseling.

A one-way analysis of variance was used to analyze the data from the Student Questionnaire, and a one-way analysis of covariance was used for both the Kuder Preference Record and the Vocational Survey. Only data from subjects who completed both the pre and post Kuder Preference Record and the pre and post Vocational Survey and the Student Questionnaire were included in the analyses. Thus, the total N's for the several analyses (Table 1) may be varied.

TABLE 1

NUMBER OF SUBJECTS IN EACH CELL OF THE EXPERIMENTAL DESIGN WHO COMPLETED THE EXPERIMENTAL AND PRE AND POST MATERIALS

Vocational Survey:

Treatment	Male	Female	Total	Counseled	Uncounseled	Total
Problem-solving	49	58	107	40	67	107
Accounting Information	55	71	126	33	93	126
General Information	44	56	100	40	60	100
Total	148	185	333	113	220	333

Kuder Preference Record:

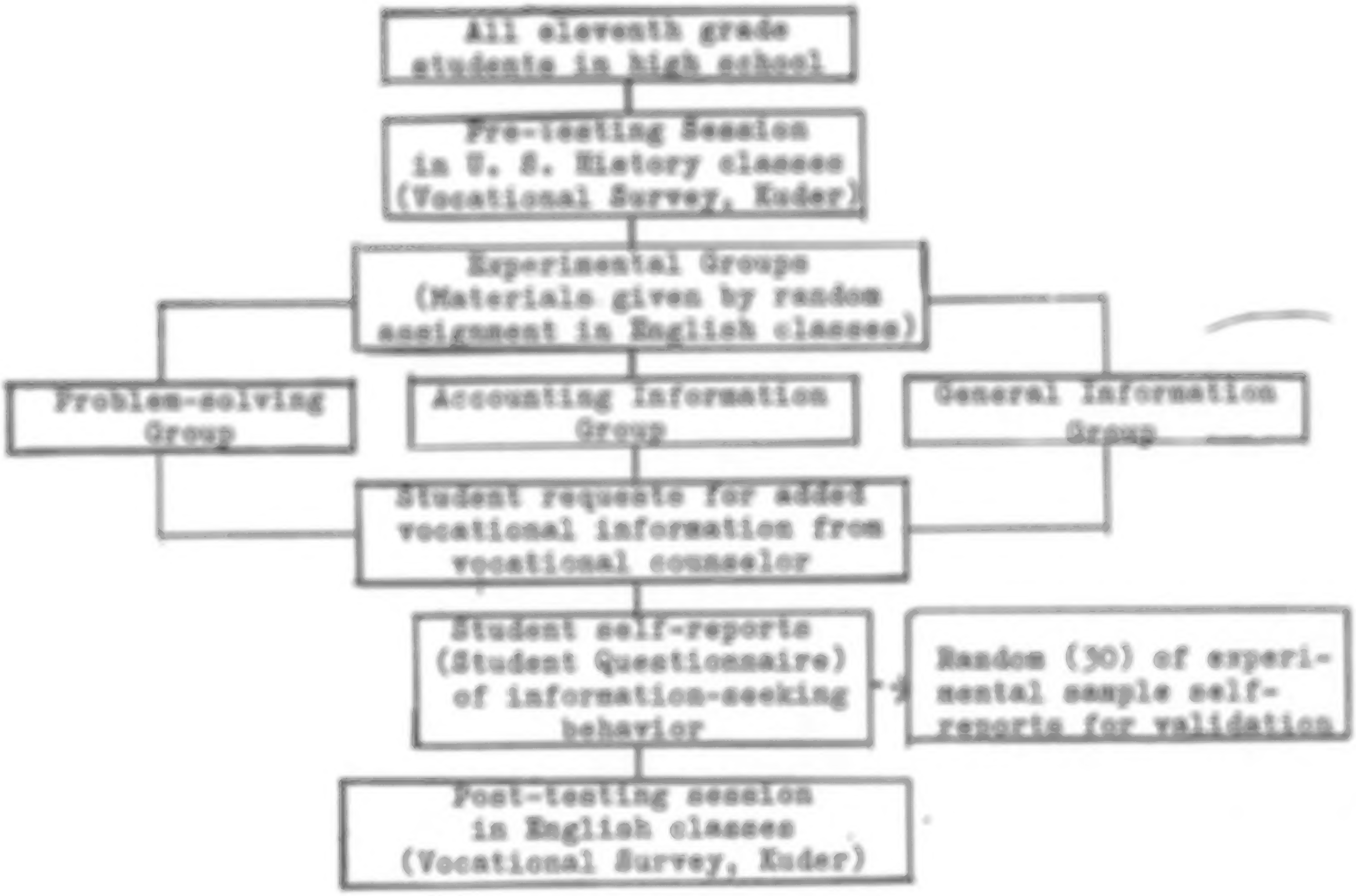
Treatment	Male	Female	Total	Counseled	Uncounseled	Total
Problem-solving	50	59	109	41	68	109
Accounting Information	51	67	118	34	84	118
General Information	42	54	96	38	58	96
Total	143	180	323	113	210	323

Student Questionnaire:

Treatment	Male	Female	Total	Counseled	Uncounseled	Total
Problem-solving	60	66	126	41	85	126
Accounting Information	57	78	135	34	101	135
General Information	48	66	114	38	76	114
Total	165	210	375	113	262	375

TABLE 2

EXPERIMENTAL PROCEDURES AND SEQUENCE OF ACTIVITIES


All eleventh grade students in high school
Pre-testing Session in U. S. History classes (Vocational Survey, Kuder)
Experimental Groups (Materials given by random assignment in English classes)
Problem-solving Group
Accounting Information Group
General Information Group
Student requests for added vocational information from vocational counselor
Student self-reports (Student Questionnaire) of information-seeking behavior
Random (30) of experimental sample self-reports for validation
Post-testing session in English classes (Vocational Survey, Kuder)

Subjects

A large comprehensive school, San Carlos High School, was chosen for the tests of the hypotheses. The students of this school come, for the most part, from middle to upper middle socio-economic-class families. The eleventh grade was given the treatment materials during the second semester of the school year, 1964-1965. A total of 396 eleventh graders from this school filled out the cells of the experimental design.

Although the class consisted of 540 students, 144 students were either excluded from, were absent, or were treated separately in the study, as follows:

1. Twenty-four eleventh graders were subjects in a concommitant study directed by Dr. Carl Thoresen of Stanford University, intended to change vocational information-seeking behavior. This group was excluded from the experimental study.
2. Seventy-four students in three eleventh grade English classes were given a research assignment by their teacher to make a vocational choice (for the purposes of the assignment) and follow through by seeking pertinent information with interviews and written material. This assignment was given to the students a few days after all the students had been given the experimental

materials for this study. This group was treated separately.

3. The remaining 46 students were absent from the experimental session.

Losses from subjects who received the experimental treatments are detailed below:

1. Vocational Survey

   The total number of subjects analyzed was 333 as compared to the 396 subjects in the experimental session. The remaining 63 subjects were not present to complete the Vocational Survey at both pre and post sessions.

2. Kuder Preference Record -- Occupational

   The total number of subjects analyzed was 323 as compared with 396 subjects in the experimental session. Sixty-three subjects were not present to complete the Kuder Preference Record at both pre and post sessions.

3. Student Questionnaire

   The total number of subjects analyzed was 375 as compared to 396 subjects who received the experimental treatments. Twenty-one subjects were absent at the time of the Student Questionnaire reporting.

4. Subject Requests for Vocational Counseling

One hundred twenty-four subjects requested and received interviews; however, the necessary data to analyze the information requested was insufficiently recorded for ten subjects. Therefore, analyses were made of only 114 subjects.

No one was excluded from the experiment for reasons other than stated above.

Treatments

Three types of treatments were instituted:

1. The Problem-solving Treatment

A group of students received the Accountant Kit (Appendix D-1) with the problem-solving exercise. Each student was asked to imagine himself in the role of an accountant called in to audit some of the accounts of a sport shop whose owner has reported that his financial return was smaller than he had estimated. The student, therefore, must examine the bank checks and shop records to find the reasons, if any, for the owner's concern.

Efforts were made to insure a high chance of success in solving the problem. In fact, over 90 per cent of the students were able to complete the tasks successfully.

The material was designed to attract as much student interest as possible. For example, the problem required some "detective work" to uncover a crime; the business, sporting goods, is of interest to many high school students. Simulated business records were provided; the bank checks, the accountant's letters, and the record of bank checks drawn were nearly identical to actual forms in current use. They were simplified only enough for the high school student to understand them.

Before being tried out in a student sample, the total booklet was checked independently by two Certified Public Accountants for accuracy and for representativeness of the problem.

2. The Accounting Information Treatment

A group of students was given some descriptive information concerning accounting (Appendix D-2). The material was arranged to appear similar to the other two treatment booklets and was written at the same level. After completing the material, students were given a short test (Appendix D-2), not to rate their knowledge, but to hold the activity and total time of each treatment approximately equal.

The main difference between this booklet and that developed for the Problem-solving Group was that while the latter asked subjects to solve a lifelike problem in accounting, the former was basically an informational guide to the accounting profession.

The booklet was made attractive by using illustrations, cartoons, and an artistic format. Care was taken to develop the content to be similar to current occupational material. The booklet describes the problem used for the Problem-solving Group but does not ask for a solution.

3. The General Information Treatment

General information was presented about occupations and the importance of planning one's future career (Appendix D-3). Neither sample problems nor information about a particular occupation was included. The information was printed in a booklet similar to the other two booklets; it was written to require approximately the same reading ability; it required answers to a number of questions, and took approximately the same amount of time to complete. The booklet was developed to attract interest in a number of ways: pictures and drawings were used; interests, abilities, personality, etc., were described as clues to be analyzed in the process of making career decisions, as a detective might solve a case; data were presented and suggestions made for seeking further occupational information.

At the end of the administration of the treatments the students were given an opportunity to request vocational counseling.

Immediate Effects of Treatment

The responses of the group of students which had been assigned by their teacher of English to do independent vocational research are tabulated separately.

Another group consisted of those students in the experiment who did not voluntarily request or receive additional occupational information.

The counseled group consisted of the students who requested and received additional occupational information (see p. 38).

Criterion Measures

There were two general behavior patterns to be assessed. For each, several techniques were employed, as the following summary indicates:

a. Interest in exploring other occupations

   1. The Vocational Survey (Appendix A-1) used as described on page 35, rated student attitudes toward specific occupations before and after treatment.
   2. The number of students who reported to the special vocational counselor for occupational information was tabulated, as described on page 39.
   3. Particular occupational information requested from the vocational counselor was recorded. The reference for this technique is on pages 39-42.
   4. The information-seeking activity reported by the students in the Student Questionnaire was recorded.

b. Interest in exploring accounting

   1. The Vocational Survey was used primarily to rate interest in exploring accounting before and after treatment. The number of students who reported to the special vocational counselor and requested information regarding accounting was recorded.

2. The Kuder Preference Record -- Form D was used as described below, to measure interest in activities chosen by accountants.

Instruments used

The Kuder Preference Record, Occupational -- Form D was used to measure interest in accounting approximately one month before and one month after the distribution of the experimental material. This test is a well-known interest inventory, a one-hundred-item form to measure interest in specific occupations. The triadic item format is used. The items deal with activities that are generally well-understood, and do not include occupational title. A sixth-grade level vocabulary is used but the items are suitable for use at all levels of interest.

In this study the answer sheets were scored by hand using the overlay scoring key developed for the Accounting scale only. There are 129 holes in the scoring key, each one representing a "correct" answer. Therefore, as the student's answer sheet is placed under the key, "correct" responses can be seen and counted.

The Vocational Survey was used to measure (a) interest in exploring accounting, and (b) interest in exploring other occupations. It was given to the experimental subjects at the same time as the Kuder.

The Vocational Survey is a simple questionnaire in which each subject states the degree of his current interest in forty-two different occupations, including accounting. The subject is asked to rate the occupations on a five-point scale, as follows:

A. I definitely want this job.
B. I am strongly interested in this job.
C. I am somewhat interested in this job.
D. I probably would not want this job.
E. I definitely would not want this job.

Care was taken to include occupations open to both men and women, which represented the eight major job classifications suggested by Wrenn (1952), and which required varying levels of education and skill.

The Student Questionnaire was used to measure (a) interest in exploring accounting, and (b) interest in exploring other occupations. It was given to the subjects in groups of from eight to twelve, approximately three weeks after the presentation of the experimental treatments. The subjects were asked to describe the specific nature and amount of their information-seeking activity before and after the experimental session.

This was a slightly modified version of the information-seeking criterion employed which proved to be a sensitive criterion measure in a number of prior studies. (Krumboltz and Schroeder, 1965; Krumboltz and Thoresen, 1964.)

Sequence of Events

Pre-testing session

All subjects were administered the Vocational Survey (Appendix A-1), and the Kuder Preference Record, Occupational -- Form D (Science Research Associates, 1956).

In March 1965, a pre-treatment session, proctored by members of the research team, was given in the students' United States History classes, a required course in the school. All subjects completed the instruments within the class period of 55 minutes; however, a small number of students required additional time to complete the instruments of Dr. Thoresen's study, noted earlier (Appendix A-4). The pre-testing session occurred during the last part of March.

Treatment session

The material for the three experimental treatments was arranged in a random sequence and distributed to students in their required English classes approximately one month after the pre-testing session. The students were given the following directions:

> We are interested in having you try out some new materials about occupations. You are not all receiving identical material because we are trying different versions of this material. Please read the material in your packet carefully and follow the instructions precisely. You will be asked to write your answers to some questions which you will find explained when you come to the proper spot. You may now open your kit, read the instructions carefully, and proceed.

As indicated, either within the material or at the end of the booklet the students were instructed to respond to a series of questions regarding the material. In all three booklets they were encouraged to use the information presented to arrive at their answers.

In order to determine the number the number of students requesting information regarding accounting and other occupations after completing the booklets, the following announcement was made:

> If you wish more information about the occupational material on which you have just worked or other career information in which you may be interested, please fill out the form which will be passed to you. This will allow you to set up an appointment within the next few days with a person trained in the vocational field.

Although students were given the option of returning the appointment request (Appendix A-3) during that class period or at a later date, all but four returned them to the proctor before the end of the English period.

Student requests for vocational information interviews

One-third, 124, of the students present at the experimental session requested interviews. Data were collected on 114 of these.

The nature of the requests was analyzed as follows:

1. The number and types of occupations for which the students requested information.
2. The total number of times information was requested by all students for any single occupation.
3. The degree of commitment each student had toward any occupation. This was determined by the interviewer's judgment of the specificity of questions asked by the student and the student's statements regarding his intent to puruse further training or education in connection with his career goals.

A three-point scale to determine "specificity" of the student's statements was used:

1. Specific
    a. Inquiries based on some knowledge regarding a single occupation, and
    b. Stated intent to pursue further information, training, or education in that occupation.
2. Semi-specific

    Inquiries based on some knowledge regarding either
    a. A single occupation without the student's stated intent to pursue further information, training, or education in that occupation,

        or
    b. Two or three occupations with the student's stated intent to pursue further information, training, or education in one or more of those occupations.
3. General
    a. Inquiries regarding general career information (interests, abilities, etc.), or
    b. Inquiries regarding stated intent to pursue two or three occupations without student information on these occupations, or
    c. Requests for short-term information regarding summer or part-time job opportunities.

Appointments were scheduled to begin three days after the experimental treatment. Because of the unexpectedly large number of requests, the appointments (lasting approximately twenty minutes each) took eight days.

Two members of the research team, well-versed in the occupational material experienced in counseling high school students, were the interviewers.

The interview sessions were structured to acquaint the student with the kinds of information available, the factors to be considered in making a career choice, and the methods of obtaining further information. Although students asked many different questions and were interested in many different kinds of career possibilities, the general format of the interview was similar in all cases, as indicated below:

a. The student was shown his completed appointment request form (Appendix A-3) in which he had explained briefly what vocational information he wished to discuss. He was then asked what he would like to talk about.

b. The student was asked to assess his abilities and school achievement. This kind of question was asked to start the student thinking about his capabilities, as well as to acquaint the interviewer with the student's abilities, achievements, interests, background, and self-perceptions.

c. Without discussing the appropriateness of the student's choices, the interviewer demonstrated information-seeking based on the interests of the student.

   Sources used were local, State, and Federal educational and occupational material; school, city, and county persons who could be contacted, and the high-school staff members with appropriate backgrounds.

   As the student assisted the interviewer in investigating the information available regarding his job choice, an attempt was made to indicate that this was a good method for learning about any job.

d. Students were encouraged to make notes of available material. They were also told where they could send for or borrow the material, if they wished. All material used with the students was available either in the counseling office, the counseling anteroom, or the high school library.

e. Most students interviewed were interested in their Kuder scores. They were told that results would be available when they returned to school in the fall and that they would be notified. In September, the chief experimenter met with the Head Counselor to arrange to familiarize the counselors with some of the techniques of using the results of this Kuder with interested students.

Information-seeking activity

Approximately three weeks following the experimental treatment, the subjects were called together in groups of eight to ten and asked to fill out a questionnaire designed to elicit self-reports of selected information-seeking actions since the treatment (Student Questionnaire, Appendix A-2). Twenty-four questions were designed to elicit reports in the following categories:

a. Persons with whom students had talked concerning possible schools or jobs.

b. Educational or vocational material the student had read, examined, or bought.

c. Educational or vocational visits students had made or planned.

d. Plans to investigate jobs connected with an occupation being considered or for purposes of meeting educational expenses.

e. Plans to take tests regarding interests, abilities, or achievements, or to talk with school counselors regarding future plans.

The members of the research team made an effort to help the students individually in answering the questions. The sessions lasted approximately 55 minutes, or one class period. The entire procedure took ten school days.

Some data not directly related to the study were included in the questionnaire. These "filler questions" were included for purposes of making the questionnaire as attractive as possible for all students and to permit some positive answers by all subjects regardless of their level of information-seeking activity.

Confirmation-Invalidation Procedures

Following the interviews, thirty of the subjects were chosen at random from the groups for further investigation. For each one, the questionnaire on information-seeking behavior was investigated by a member of the research team to determine the accuracy of the self-report. The investigator checked the reported activities by such methods as contacting people to whom the student reported talking and checking libraries to confirm that reported books were available.

No evidence of false self-report was discovered. Since some reports were unconfirmable, this procedure did not produce complete evidence that reports were fully valid.

In Table 3, below, is a list of each category of information-seeking activity and the results of the investigation.

TABLE 3

NUMBER OF STUDENT REPORTS INVESTIGATED FOR CONFIRMATION OF INFORMATION-SEEKING

Type of Information-Seeking	Confirmed	Invalidated	Unconfirmable	Failure to Complete Investigation	Total Reported
(1) Talking with people now working at the type of job being considered.	4	0	0	0	4
(2) Talking with people who have worked in the past at the type being considered.	0	0	1	0	1
(3) Talking with people who know about the type of job being considered (other than above people).	4	0	1	0	5
(4) Talking with people who are presently attending any of the schools being considered.	8	0	1	0	9
(5) Talking with people who have attended one of the schools being considered.	2	0	2	0	4
(6) Talking with people who know about schools and college even though they didn't attend one of the schools being considered.	7	0	0	0	7

TABLE 3 (Cont'd.)

Type of Information-Seeking	Con-firmed	Invali-dated	Uncon-firmable	Failure to Complete Investigation	Total Reported
(7) Writing to request college pamphlet, catalog or occupational pamphlet.	2	0	0	0	2
(8) Reading or looking at material about the occupation being considered.	4	0	1	0	5
(9) Reading or looking at material about occupations other than that being considered.	3	0	1	0	4
(10) Reading or looking at material about admittance into schools and colleges being considered.	9	0	1	0	10
(11) Buying or borrowing material about admittance into schools and colleges being considered that has not been read yet.	2	0	1	0	3
(12) Viewing TV programs, exhibits, or shows or listening to radio programs about an occupation or school or college being considered.	0	0	2	0	2

TABLE 3 (Cont'd.)

Type of Information-Seeking	Con-firmed	Invali-dated	Uncon-firmable	Failure to Complete Investigation	Total Reported
(13) Visiting any schools that are being considered.	1	0	1	0	2
(14) Making definite plans to visit schools that are being considered.	0	0	0	0	0
(15) Making an on-the-job visit to an occupation being considered.	1	0	0	0	1
(16) Making definite plans to make an on-the-job visit to an occupation being considered.	0	0	2	0	2
(17) Looking into or making definite plans to obtain a summer or part-time job connected with an occupation being considered.	2	0	2	0	4
(18) Looking into or making definite plans to obtain a summer or part-time job to make money for future college expenses.	5	0	4	0	9
(19) Inquiring into or making plans to obtain a part-time job connected with an occupation being considered.	2	0	3	0	5

TABLE 3 (Cont'd.)

Type of Information-Seeking	Confirmed	Invalidated	Unconfirmable	Failure to Complete Investigation	Total Reported
(20) Talking or making definite plans to take tests for the purpose of discovering self-information relevant to personal plans.	3	0	0	0	3
(21) Taling to regular high school counselor for purpose of gaining self-information relevant to personal plans.	4	0	0	0	4
Total	63	0	23	0	86

Twenty-three of the 86 reported activities were considered unconfirmable. A summary of these unconfirmable activities follows:

a. Twelve students reported plans to take visits to schools and colleges of their choice. As these visits either had not taken place at the time of the investigation, did not appear they would occur soon, or involved vague planning, they were considered unconfirmable. This section should probably be deleted from future questionnaires or considerably revised.

b. Two students reported seeing posters regarding the occupation of their choice at the airport and on the highway.

c. One student reported watching a television program whose subject was the occupation of his choice.

d. Three students reported talking with college friends about future educational plans.

e. One student reported talking with a friend of her parent.

f. Two students reported reading occupational material.

g. One student reported talking with a barber about this occupation.

While the confirmation-invalidation procedures were not infallible it is contended that they do provide evidence that the subject self-reports were reasonably valid.

Preparations and Arrangements

Selection of Occupation

The occupation of accounting was used in this study. It was considered appropriate because:

1. It is open to both men and women;
2. It is not a "glamour" job to which many students already aspire on the basis of superficial information;
3. Accountants are in demand according to the best estimates available to the United States Department of Labor and are in demand in the local area according to Manpower Resources of the San Francisco-Oakland Bay Area 1960-70;
4. Accounting requires a variety of skills, but no rare or unusual skill;
5. The profession has many levels from clerk to Certified Public Accountant making it available to persons of disparate skills and abilities, and training.

According to the Occupational Outlook Handbook (1963-64), accounting is the second largest field of professional employment for men after engineering. While it is true that fewer than ten per cent of all accountants are women, the field is open to them at least to the degree that the majority of other representative occupations are. In fact, at the basic skill-level, bookkeeping, a large proportion of the workers are women.

Preparation of Interest-Generating Materials

The success of the entire project depended upon the skill with which the problem-solving tasks were prepared. The following criteria were set up in the preparation of these materials:

1. The problem should be representative of the type of problem faced by members of the chosen occupation.
2. The problem should be worded in sufficiently simple language that reading difficulty would not interfere with problem solution.
3. The problem should be intrinsically interesting to the majority of subjects.
4. Seventy-five per cent of the subjects should be able to solve the problems within 50 minutes, the typical class period.
5. The methods of solution of the problem must be representative of the occupation.

Experimental Materials

The three booklets for the experimental groups (see Appendix D) were developed explicitly for this study. They were written and designed to be clear, readable, interesting, and easy to answer. Each of the booklets was tested on three different groups of eleventh-grade students from nearby high schools in the same school district as the treatment school.

In order to equalize the time spent on each type of material as well as to require the same general amount of concentration and written work, questionnaires were inserted in the material for the Accounting Information Group and the General Information Group. These questionnaires (see Appendix D-2 and D-3) were labeled Report Form to correspond with the Report Form in the Problem-solving Group's booklet.

The material for the Problem-solving Group was checked by two Certified Public Accountants who judged it representative of the type of work an accountant might normally do. Auditing procedures and accounting forms used were checked for consistency with accepted accounting practice presented in accounting and auditing books such as that of Montgomery (1949).

In developing the material for the Accounting Information Group, the two main sources for factual information were the United States Department of Labor publications (Occupational Outlook Handbook, 1963-64, and Employment Opportunities for Women in Professional Accounting, 1957) and various pamphlets developed by the American Institute of Certified Public Accountants, chief of which was Accounting May Be the Right Field for You (1961).

The third booklet, developed for the General Information Group, contained information available in most pamphlets on assessing interests, abilities, achievements, personality, etc.

A chief source was Science Research Guidance Booklet Series (Humphreys, 1965, and Paulson and Kuder, 1965).

Arrangements

Care was taken to assure cooperation and support of the school and district personnel. As the various treatments involved one-fourth of the school's students and all the school's certificated and secretarial staff to at least some degree, proper communication was essential. The following steps were taken, therefore, to forestall any problems in this area:

Preliminary arrangements

1. Since much of the school's burden in helping in this study would fall to the Head Counselor, he was contacted first. Informal discussions were held to develop a preliminary interest and understanding.
2. Two discussions were held with the Director of Guidance and Research for the District. The nature of the study was described in detail. She proposed that it would be appropriate for her to seek the Superintendent's approval of the project and then meet with the Head Counselor and Principal of San Carlos High School.
3. A formal written request for the Superintendent's approval was made (Appendix B-1). When this was

received by the experimenter, arrangements were made to speak with the Principal of the school.

Arrangements at the School

1. In the discussion with the Principal, assurances were given that care would be taken to minimize interruptions of the normal school curriculum. He was assured that this was considered a priority of those engaged in the study. Any proposed change in the study as outlined to him, would be discussed first with either him or his delegate, the Head Counselor.
2. Thereafter, most of the decisions and arrangements were made by consulting with the Head Counselor. The Director of Guidance and Research was informed of the general progress of the study in the school. The following arrangements were made with the Head Counselor:
    a. All dates were cleared to eliminate any conflict in regard to assemblies, special days, examination days, etc.
    b. Since very few rooms were vacant in the school, reservations for space needed were made at least a month in advance.
    c. The latest eleventh-grade student list was made available by the Head Counselor and permission was gained to use school records

for updating as required.

- d. Permission was gained to use the Head Counselor's name in pass requests to aid in obtaining teacher cooperation in sending students for interviews.
- e. The Head Counselor's suggestions were followed in regard to such matters as information given to teachers and students, teachers who could be utilized as resource persons for students requesting occupational information, methods of achieving good relationships with the staff, etc.
- f. Technical information such as student ability scores as well as routine use of the files were cleared through the Head Counselor. In addition, it was agreed that he would inform the experimenter if any actual or apparent error of procedure disturbed a member or group of the school staff so that corrections could be made.

3. The following individuals and groups were then contacted:
   - a. The English and Social Studies Department heads were seen separately and the general nature of the study was discussed with them. They had been previously informed of the

project by the Principal and the Head Counselor. At the department heads' suggestion, a joint department meeting was held with the eleventh-grade teachers of English and the eleventh-grade United States History teachers. At that meeting general aspects of the study were explained. The teachers were told that the main purpose of the study was to develop occupational materials for high-school students to generate increased student interest in occupational choices. They were told that there would be sessions before and after the experimental materials were given to the students to gather data regarding the effectiveness of the experimental materials. Certain sessions would require the students to fill out some forms while others would consist of interviews. The teachers were told that proctors would be used for the treatment sessions and that although it was not necessary for them to be in class except to take the roll, they were invited to observe.

b. Individual meetings were held with the Boys' Vice Principal, the Girls' Vice

Principal, and the three eleventh-grade counselors. All these people, including the Head Counselor and the Principal, received copies of all communications to the teachers (Appendix B-2, 3, 4, 5).

c. Research team members were chosen as discussed in the section devoted to this subject (pp. 58-59). The district Director of Guidance and Research volunteered her own services as well as those of the San Carlos High School psychologist and the psychologist interning at that school, depending on their time schedules. Both were interested in the project as explained to them by the chief experimenter and agreed to help. A county curriculum consultant and a Stanford University doctoral student also volunteered their services. Each member of the team was given a sample set of materials and a detailed set of instructions for his part in the study a few days before the treatment (Appendix C). The experimenter held individual conferences with each team member to clarify details. Items covered were the proctor's schedule for each school period, description of the communications already had with teachers, and methods of contacting the chief experimenter during treatment sessions in case of questions or emergency procedures.

d. Effort was taken to minimize the interruption of the regular school curriculum:

   1. Although it was necessary to get more than 700 students out of class (some were taken more than once for different treatment purposes), in only a very few cases were more than two students taken out of any one teacher's class during any single class period.
   2. Teachers were told that although it would be very helpful for them to honor the pass requests, it was clearly understood that if it was felt disadvantageous for the student to miss class the request should not be honored. With the majority of teachers this turned out to be no problem and was considered well worth the extra work.
   3. As few requests as possible were made of the high-school clerical staff although their assistance was offered.

4. The schedule announced to the students and teachers were followed as closely as possible.
5. Whenever something unforeseen occurred, an attempt was made to correct it or at least to apologize or explain it. For example, if three students were taken from a teacher's class for interview purposes, the teacher was contacted, an apology made, and an effort made to take fewer students from this teacher's classes in the future.

Research Team

The research team consisted of six persons trained and experienced in working with students. Some of the characteristics and experience of these persons as well as their duties in this study are as follows:

	Member of Research Team					
	A	B	C	D	E*	F
1. Credentials held -						
a. Teaching		x	x	x	x	x
b. Supervision			x			
c. Administrative		x	x	x	x	x
d. Pupil Personnel - Psychologist	x	x		x	x	x
2. Individual and group leadership experience	x	x	x	x	x	x
3. Approximate number of years working with secondary age students -						
a. Two to five years	x					x
b. Five to ten years			x			
c. Ten to fifteen years		x		x	x	
4. Age of research person -						
a. 25-35 years old	x					
b. 35-45 years old		x	x	x	x	x
5. Sex of research person -						
a. Male				x	x	x
b. Female	x	x	x			
6. Duties in this study						
a. Proctoring, pre-test		x	x	x		x
b. Proctoring, post-test	x	x		x		x
c. Proctoring, experimental session	x	x	x			x
d. 20 minute interviews with students for vocational information			x		x	
e. Proctoring, Student Questionnaire with small groups of students			x		x	
f. Confirmation of information-seeking behavior					x	
g. Coordination and arrangements		x			x	

---

*Main experimenter

CHAPTER III

RESULTS AND DISCUSSION

Data Analysis

The facilities of the Stanford University Computation Center were utilized for all analyses of variance and covariance, as follows:

1. The analysis of covariance was carried out by the BMDO4V program, which is analysis of covariance for one-way classification with unequal numbers of cases within treatment groups (Dixon, 1964, p. 525). This program was used for analyzing differences between treatments on the Vocational Survey (Appendix A-1) and the Kuder Preference Record, Occupational -- Form D.
2. The analysis of variance was carried out by the BMDO1V program, which is analysis of variance for one-way classification with unequal numbers of cases within treatment groups (Dixon, 1964, p. 483). This program was used for analyzing differences between treatments on the Student Questionnaire (Appendix A-2).

Further analyses for specific comparisons were carried out in cases where F was significant. The t test was applied to compare the Problem-solving Treatment with the Accounting Information

Treatment or the Problem-solving Treatment with the General Information Treatment.

The chi-square test of independence (Garrett, 1957, p. 262) was applied to determine the differences in number and specificity of requests for occupational information by counseled subjects.

Hypotheses Tested

The following research hypotheses were tested:

1. Hypothesis One

   Eleventh-grade students given an opportunity to solve simulated problems connected with a particular occupation will engage in more interest-indicative activities relevant to that occupation than equivalent control students.

2. Hypothesis Two

   Eleventh-grade students given an opportunity to solve simulated problems connected with a particular occupation will engage in more interest-indicative activities relevant to that occupation than will equivalent subjects given occupational information descriptive of that occupation.

Each hypothesis was tested for boys and girls and for those who specifically elected to be counseled or not counseled.

Expected Outcomes

Interest in exploring accounting and other occupations and favorable attitude toward accounting and other occupations

Rating of specific occupations (Vocational Survey)

The Vocational Survey (Appendix A-1) lists 42 occupations, chosen for their variety in terms of training and education needed, job function, etc., so that most students would feel that one or more of the occupations listed had some meaning to them.

The chief occupation of interest in the experiment was Accountant (Item No. 12, Vocational Survey). For each pupil the score represented the degree of interest in accounting rated on a five-point scale. This score was adjusted in the analysis of covariance to remove differences predictable from pre-treatment differences in results. The adjusted means appear in Tables 4, 6, 8, 10, 11, and 12.

There were significant differences consistent with Hypothesis One in all three areas of the analysis: analysis by treatment, sex, and counseling. No significant differences, however, were found in support of Hypothesis Two. The results fell with regard to Hypothesis One as follows:

1. Main effect

   The data from the Vocational Survey support Hypothesis One as it refers to exploring the occupation, Accountant (Tables 4 and 5) beyond the .05 level of significance.

Each of the 42 occupations listed on the _Vocational Survey_ was analyzed in a like manner but only the occupation _Accountant_ indicated a significant difference between treatments.

2. Treatment differences by sex

   The data regarding _Accountant_ indicated a trend of support for Hypothesis One (.10 level of significance) for boys (Tables 6 and 7). No significant differences were found for girls (Table 8).

   Data regarding one other occupation, _Stewardess_, indicated significant sex differences. This is noted below and in Table 12.

3. Counseled group treatment differences

   Among counseled students, a support for Hypothesis One was evident, beyond the .01 level of significance, for the occupation, _Accountant_ (Tables 9 and 10).

4. Treatment differences in group of students not requesting counseling

   No significant treatment differences in the hypothesized directions were evident among the students not requesting counseling for any of the 42 occupations of the _Vocational Survey_ (Table 11).

TABLE 4

ADJUSTED MEANS, STANDARD ERROR OF ADJUSTED MEANS, N'S, AND TESTS OF SIGNIFICANCE FOR TREATMENTS ON ITEM NO. 12, ACCOUNTING, IN THE VOCATIONAL SURVEY

Treatment	N	Adjusted Mean	SE Adjusted Mean	F Value
Problem-solving	107	2.01	0.10	3.611*
Accounting Information	126	2.01	0.09	
General Information	100	1.70	0.10	
Total	333			

$^{*}F(2,329) \geq p < .05 = 3.00$
$^{**}F(2,329) \geq p < .01 = 4.61$

TABLE 5

TEST OF THE MEAN DIFFERENCES BETWEEN TREATMENTS ON ITEM NO. 12, ACCOUNTING, FOR TREATMENTS ON THE VOCATIONAL SURVEY

Difference in Adjusted Means of Subscripted Treatments*		SE for the Difference of the Means of Subscripted Treatments*	t Value	Level of Significance
$T_1 - T_2$	.002	.131	0.29	Not significant
$T_1 - T_3$	.310	.136	2.27	.05

*T_1 - Problem-solving Treatment
T_2 - Accounting Information Treatment
T_3 - General Information Treatment

TABLE 6

ADJUSTED MEANS, STANDARD ERROR OF ADJUSTED MEANS, N'S, AND TESTS OF SIGNIFICANCE FOR MALES ON ITEM NO. 12, ACCOUNTING, IN THE VOCATIONAL SURVEY

Treatment	N	Adjusted Mean	SE of Adjusted Mean	F Value
Problem-solving	49	2.09	0.14	
Accounting Information	55	2.23	0.13	3.661*
General Information	44	1.71	0.15	
Total	148			

$*F(2,144) \geq p < .05 = 3.058$
$**F(2,144) \geq p < .01 = 4.76$

TABLE 7

TEST OF THE MEAN DIFFERENCES BETWEEN TREATMENTS ON ITEM NO. 12, ACCOUNTING, FOR MALES ON THE VOCATIONAL SURVEY

Difference in Adjusted Means of Subscripted Treatments*		SE for the Difference of the Means of Subscripted Treatments*	t Value	Level of Significance
$T_1 - T_2$	0.146	0.193	0.76	Not significant
$T_1 - T_3$	0.381	0.205	1.86	.10

$*T_1$ - Problem-solving Treatment
T_2 - Accounting Information Treatment
T_3 - General Information Treatment

TABLE 8

ADJUSTED MEANS, STANDARD ERROR OF ADJUSTED MEANS, N'S, AND TESTS OF SIGNIFICANCE FOR COUNSELED GROUP ON ITEM NO. 12, ACCOUNTING, IN THE VOCATIONAL SURVEY

Treatment	N	Adjusted Mean	SE Adjusted Mean	F Value
Problem-solving	40	2.34	0.17	
Accounting Information	33	2.30	0.19	5.380**
General Information	40	1.64	0.11	
Total	113			

*$F(2,109) \geq p < .05 = 3.079$
**$F(2,109) \geq p < .01 = 4.810$

TABLE 9

TEST OF THE MEAN DIFFERENCES BETWEEN TREATMENTS ON ITEM NO. 12, ACCOUNTING, FOR THE COUNSELED GROUP ON THE VOCATIONAL SURVEY

Difference in Adjusted Means of Subscripted Treatments*		SE for the Difference of the Means of Subscripted Treatments*	t Value	Level of Significance
$T_1 - T_2$	0.039	0.250	0.16	Not significant
$T_1 - T_3$	0.704	0.238	2.96	.01

*T_1 - Problem-solving Treatment
T_2 - Accounting Information Treatment
T_3 - General Information Treatment

TABLE 10

ADJUSTED MEANS, STANDARD ERROR OF ADJUSTED MEANS, N'S, AND TESTS OF SIGNIFICANCE FOR FEMALES ON ITEM NO. 12, ACCOUNTING, ON THE VOCATIONAL SURVEY

Treatment	N	Adjusted Mean	SE Adjusted Mean	F Value
Problem-solving	58	1.90	0.13	1.063
Accounting Information	71	1.87	0.12	
General Information	56	1.66	0.13	
Total	185			

*$F(2,181) \geq p < .05 = 3.00$
**$F(2,181) \geq p < .01 = 4.61$

TABLE 11

ADJUSTED MEANS, STANDARD ERROR OF ADJUSTED MEANS, N'S, AND TESTS OF SIGNIFICANCE FOR GROUP NOT REQUESTING COUNSELING ON ITEM NO. 12, ACCOUNTING, ON THE VOCATIONAL SURVEY

Treatment	N	Adjusted Mean	SE Adjusted Mean	F Value
Problem-solving	67	1.78	0.11	1.16
Accounting Information	93	1.93	0.10	
General Information	60	1.71	0.12	
Total	220			

*$F(2.216) \geq p < .05 = 3.00$
**$F(2.216) \geq p < .01 = 4.61$

TABLE 12
ADJUSTED MEANS, STANDARD ERROR OF ADJUSTED MEANS, AND N'S FOR ITEMS OTHER THAN ACCOUNTING WHERE DIFFERENCES APPEARED IN THE VOCATIONAL SURVEY

Item	Occupation	Significant Variable	TREATMENTS									F Value
			Problem-solving			Acctg. Information			Gen'l. Information			
			N	Adjusted Mean	SE of Adjusted Mean	N	Adjusted Mean	SE of Adjusted Mean	N	Adjusted Mean	SE of Adjusted Mean	
4	Stewardess	Sex (females)	58	3.47	0.16	71	2.94	0.14	56	3.41	0.16	4.12 *
9	Professor	Treatments	49	2.35	2.37	55	2.07	2.08	44	1.80	1.77	3.63 +
11	Plumber	Counseled subjects	40	1.58	0.10	33	1.33	0.11	40	2.00	0.10	3.66 *
19	Carpenter	Sex (females)	58	1.09	1.07	71	1.17	1.19	56	1.25	1.25	3.42 x
33	Factory Worker	Non-counseled subjects	67	1.33	0.08	93	1.30	0.07	60	1.58	0.09	3.62 y
35	Gardener	Sex (females)	58	1.28	1.08	71	1.17	0.07	56	1.52	0.08	5.08 xx

* $F(2,109) \geq p < .05 = 3.08$, ** $p < .01 = 4.81$
+ $F(2,144) \geq p < .05 = 3.06$, ++ $p < .01 = 4.76$
x $F(2,181) \geq p < .05 = 3.00$, xx $p < .01 = 4.61$
y $F(2,216) \geq p < .05 = 3.00$, yy $p < .01 = 4.61$

In addition to the above differences for the occupation, Accountant, in support of Hypothesis One, a number of other differences were noted for six additional occupations in the Vocational Survey (Table 12) as follows:

1. Support for Hypothesis One occurred for treatments for the occupation Professor.
2. Support for Hypothesis Two occurred for the girls for the occupation Stewardess.
3. Additional significant differences, in a direction opposite to Hypothesis One, occurred for girls for the occupation Carpenter; and for the subjects who did not request counseling, for the occupation Factory Worker.
4. Additional unhypothesized differences occurred indicating greater change for the General Information Treatment as compared to the Accounting Information Treatment group. These differences were for girls for the occupation Gardener; the counseled subjects for the occupation Plumber; and for the students who did not request counseling for the occupation Factory Worker.

In summary, the results from the Vocational Survey indicated significant treatment differences as analyzed by students counseled and for the males, for the occupation of main interest, Accountant. These differences supported Hypothesis One ("Eleventh grade students given an opportunity to solve simulated problems connected with a particular occupation will engage in more interest-indicative activities relevant to that occupation than equivalent control students."). While this result was confirmed by significant differences for all cases, there were no significant differences in separate analyses for females or from the students not requesting counseling in this occupation. A trend in support of Hypothesis One was noted for males.

Although the above differences between the Problem-solving and the General Information treatments were statistically significant, the actual differences were not large; that is, the mean difference between the pre and post means represented a change between the categories, "I definitely would not want this job," to, "I probably would not want this job." Of course, some students did make level changes while the majority did not -- a fact hidden by the averages.

The significant differences supporting the experimental hypotheses for the other occupations were few and appear to be the result of chance factors.

Interest in activities like those of accountants

(Measured interest in accounting using the Kuder Preference Record -- Occupational, Form D)

Results showed no significant differences in analyzing treatment, sex, or whether or not the subjects requested counseling, for the total Accountant score on the Kuder (Table 13).

TABLE 13
ADJUSTED MEANS, STANDARD ERRORS OF ADJUSTED MEANS, AND N'S FOR CERTAIN VARIABLES TESTED FOR THE TOTAL ACCOUNTING SCORE OF THE KUDER PREFERENCE RECORD - FORM D

Variable	TREATMENTS									F Value
	Problem-solving			Acctg. Information			Gen'l. Information			
	N	Adjusted Mean	SE of Adjusted Mean	N	Adjusted Mean	SE of Adjusted Mean	N	Adjusted Mean	SE of Adjusted Mean	
Treatments	109	39.88	0.55	118	40.90	0.52	96	40.19	0.57	0.96
Non-counseled	68	39.09	0.66	84	40.66	0.54	58	39.54	0.60	1.91
Counseled	41	41.51	0.80	34	41.60	0.87	38	41.31	0.83	0.03
Female	59	39.05	0.58	67	40.01	0.54	54	40.26	0.60	1.17
Male	50	41.23	0.82	51	42.14	0.81	42	40.20	0.89	1.31

* $F(2,109) \geq p<.05 = 3.08$
+ $F(2,139) \geq p<.05 = 3.07$
x $F(2,176) \geq p<.05 = 3.00$
y $F(2,206) \geq p<.05 = 3.00$
z $F(2,319) \geq p<.05 = 3.00$

Amount of information-seeking

Self-report listings by students (Student Questionnaire, Appendix A-2).

For purposes of analysis, the Student Questionnaire responses were divided into five sections, each representing a certain type of information-seeking activity, as follows:

Section A - Persons contacted for vocational information.

Section B - Vocational information read, sent for, or heard.

Section C - On-the-job or school visits for vocational information.

Section D - Plans for summer or part-time jobs.

Section E - Plans for additional vocational testing or counseling.

The scores were the number of affirmative responses to the questions in each section.

The exact nature of each section can be ascertained through an examination of the questions asked the students under each of these sections of the Student Questionnaire.

Results showed no significant differences in analyzing treatment, sex, or whether or not the subjects requested counseling. A summary of the analysis is shown in Table 14.

Subjects requesting additional occupational information (Counseled Group)

Interviews were scheduled for subjects who requested them, to estimate the amount of interest generated by the treatments and to estimate the amount of interest in each occupation.

TABLE 14
MEANS, STANDARD DEVIATIONS, AND N'S TESTED FOR THE TOTAL SCORE OF THE STUDENT QUESTIONNAIRE

Variable	T R E A T M E N T S									F Value
	Problem-solving			Acctg. Information			Gen'l. Information			
	N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation	
Treatments	126	3.72	3.25	135	3.24	2.62	114	3.58	2.56	1.01
Non-counseled	85	3.56	3.05	101	3.26	2.58	76	3.43	2.70	0.27
Counseled	41	3.93	3.51	34	3.40	2.98	38	3.80	2.33	0.33
Female	66	4.08	3.16	78	3.58	2.77	66	4.03	2.35	0.72
Male	60	3.27	3.24	57	2.91	2.54	48	2.94	2.72	0.28

* F(2,110) - p .05 = 3.07
+ F(2,162) - p .05 = 3.00
x F(2,259) - p .05 = 3.00
y F(2,372) - p .05 = 3.00

Interest was assessed by examining the number and kinds of different occupations for which subjects requested information and by examining the nature of information requested by subjects during the counseling interview.

For purposes of recording and analysis, the occupational information requested by each subject was categorized as follows:

1. Specific information

   This category reflected knowledgeable inquiries by the subject (a) in regard to a single occupation and (b) in connection with his stated intent to pursue further information, training, or education in that occupation.

2. Semi-specific information

   This category represented knowledgeable inquiries by the subject regarding either (a) a single occupation without the subject's stated intent to pursue further information, training, or education in that occupation, or (b) two or three occupations with the subject's stated intent to pursue further information, training, or education in one or more of these occupations.

3. General information

   This category reflected inquiries regarding general information (interests, abilities, etc.), or (b) inquiries regarding more than three occupations, or (c) short-term questions regarding summer or part-time job opportunities.

A. Examination of the number and kinds of different occupations for which subjects requested information.

The total numbers of occupational requests, different occupations requested, and number of subjects for each of the three treatments are shown in Table 10. As previously stated, information regarding these occupations was requested in the course of the subjects' individual interviews with the special vocational counselor.

Table 15 also indicates that the occupation most frequently inquired about was accounting. This was true in both the Problem-solving and the Accounting Information treatments. No students inquired about accounting in the General Information Treatment.

The chi-square test of independence (Garrett, 1959) was used to compare the number of counseled subjects requesting information regarding no or one occupation with the number of subjects who requested information regarding two or more occupations (Tables 16 and 17).

TABLE 15

REQUESTS FOR OCCUPATIONAL INFORMATION BY COUNSELED SUBJECTS

Occupational Requests	TREATMENTS															
	Problem-solving				Accounting Information				General Information				Total			
	M	F	T	*	M	F	T	*	M	F	T	*	M	F	T	*
1. Accountant	5	5	10	(1)	3	5	8	(1)	-	-	-		8	10	18	(2)
2. Actor	-	-	-		1	-	1		-	1	1		1	1	2	
3. Advertiser	-	1	1		-	-	-		-	-	-		-	1	1	
4. Architect	-	1	1		1	-	1		-	-	-		1	1	2	
5. Artist	3	-	3		-	-	-		-	2	2		3	2	5	(5)
6. Bookkeeper	-	1	1		1	1	2		-	-	-		1	2	3	
7. Businessman	1	1	2		-	1	1		-	-	-		1	2	3	
8. Chemist	-	1	1		1	-	1		-	-	-		1	1	2	
9. Cosmetologist	-	1	1		-	-	-		-	1	1		-	2	2	
10. Dental Hygienist	-	1	1		-	-	-		-	-	-		-	1	1	
11. Dentist	3	-	3		-	-	-		-	-	-		3	-	3	
12. Dietitian	-	-	-		-	1	1		-	-	-		-	1	1	
13. Engineer	-	-	-		2	-	2		1	-	1		3	-	3	
14. Fashion Designer	-	1	1		-	-	-		-	-	-		-	1	1	
15. Food Manager	-	-	-		-	-	-		1	-	1		1	-	1	
16. Forester	3	-	3		2	-	2		4	-	4	(2)	9	-	9	(5)
17. Geologist	-	-	-		-	-	-		1	-	1		1	-	1	
18. Home Economist	-	-	-		-	-	-		-	3	3	(3)	-	3	3	
19. Interior Decorator	-	1	1		-	-	-		-	2	2		-	3	3	
20. Journalist	-	-	-		1	-	1		-	-	-		1	-	1	
21. Lab Technician	-	1	1		-	1	1		-	1	1		-	3	3	
22. Lawyer	1	-	1		-	-	-		1	1	2		2	1	3	
23. Linguist	-	-	-		1	-	1		-	-	-		1	-	1	
24. Machinist	1	-	1		-	-	-		2	-	2		3	-	3	
25. Mathematician	-	1	1		-	1	1		-	-	-		-	2	2	
26. Mech. Designer	-	-	-		-	-	-		1	-	1		1	-	1	
27. Misc. Information	6	3	9	(2)	1	3	4	(3)	5	9	14	(1)	12	15	27	(1)
28. Meteorologist	1	-	1		-	-	-		-	-	-		1	-	1	
29. Nurse	-	2	2		-	1	1		-	1	1		-	4	4	
30. Pharmacist	-	1	1		2	-	2		-	1	1		2	2	4	
31. Philosopher	-	1	1		-	-	-		-	-	-		-	1	1	
32. Physician	2	-	2		1	-	1		1	-	1		4	-	4	
33. Physio-therapist	-	1	1		-	-	-		1	1	2		1	2	3	
34. Pilot	1	-	1		-	-	-		1	-	1		2	-	2	
35. Pol. Scientist	2	-	2		-	-	-		-	-	-		2	-	2	

TABLE 15 (Cont'd.)

Occupational Requests	TREATMENTS												Total			
	Problem-solving				Accounting Information				General Information							
	M	F	T	*	M	F	T	*	M	F	T	*	M	F	T	*
36. Psychiatrist	-	1	1		1	2	3	(5)	-	-	-		1	3	4	
37. Realtor	1	-	1		-	-	-		-	-	-		1	-	1	
38. Recorder, Courtroom	-	-	-		1	-	1		-	-	-		1	-	1	
39. Salesman	-	-	-		-	-	-		1	-	1		1	-	1	
40. Scientist	3	3	6	(4)	4	2	6	(2)	-	-	-		7	5	12	(3)
41. Secretary	-	2	2		-	1	1		-	2	2		-	5	5	
42. Social Worker	-	4	4		-	4	4	(3)	-	3	3	(3)	-	11	11	(4)
43. Stewardess	-	4	4		-	1	1		-	3	3	(3)	-	8	8	
44. Teacher	5	2	7	(3)	-	1	1		-	1	1		5	4	9	
45. Writer	1	-	1		-	2	2		1	-	1		2	2	4	
No. occptl. requests	39	40	79		23	27	50		21	32	53		83	99	182	
No. different occpns.	15	22	34		15	15	25		13	15	25		31	29	45	
Number of subjects	21	21	42		15	16	31		17	24	41		53	61	114	

*Ranking by occupational category

TABLE 16

NUMBER OF COUNSELED SUBJECTS REQUESTING INFORMATION ON FEWER THAN TWO VS. TWO OR MORE OCCUPATIONS, BY TREATMENT AND SEX

Treatment	Number of Counseled Subjects Requesting Info.								
	One Occupation per Subject			Two or More Occupations per Subject			Total		
	M	F	T	M	F	T	M	F	T
Problem-solving	14	11	25	7	10	17	21	21	42
Accounting Information	10	10	20	5	6	11	15	16	31
General Information	16	19	35	1	5	6	17	24	41
Total	40	40	80	13	21	34	53	61	114

TABLE 17

RESULTS OF CHI-SQUARE TESTS OF INDEPENDENCE COMPARING THE NUMBER OF COUNSELED SUBJECTS REQUESTING INFORMATION OF FEWER THAN TWO VS. TWO OR MORE OCCUPATIONAL REQUESTS EACH BY TREATMENT AND SEX

Treatments Compared	Total Sample		Females		Males	
	Chi Square	Level of Significance	Chi Square	Level of Significance	Chi Square	Level of Significance
Problem-solving, Accounting Information and General Information	7.29	.05	2.05	.30	3.06	.30
Problem-solving and Accounting Information	.04	.80	0.69	.30	0.13	.70
Problem-solving and General Information	5.77	.02	2.51	.10	6.08	.02

TABLE 18

NUMBER OF COUNSELED SUBJECTS REQUESTING SPECIFIC AND NON-SPECIFIC OCCUPATIONAL INFORMATION BY TREATMENT AND SEX

Treatments	Subjects' Requests for Occupational Information								
	Specific Information			Semi-specific and General Information			Total Information		
	M	F	T	M	F	T	M	F	T
Problem-solving	14	16	30	7	5	12	21	21	42
Accounting Information	8	10	18	7	6	13	15	16	31
General Information	7	10	17	10	14	24	17	24	41
Total	29	36	65	24	25	49	53	61	114

TABLE 19

RESULTS OF CHI-SQUARE TESTS OF INDEPENDENCE COMPARING SPECIFIC WITH SEMI-SPECIFIC AND GENERAL INFORMATION REQUESTED BY COUNSELED SUBJECTS

Treatments Compared	Total Sample		Females		Males	
	Chi Square	Level of Significance	Chi Square	Level of Significance	Chi Square	Level of Significance
Problem-solving, Accounting Information and General Information	8.58	.02	6.58	.05	2.51	.20
Problem-solving and Accounting Information	0.88	.30	0.29	.50	0.21	.50
Problem-solving and General Information	6.41	.02	1.79	.10	1.55	.20

As indicated in Table 17, a significantly greater number of subjects of the Problem-solving group requested two or more occupations than did the subjects in the General Information Treatment group. This was true for the total of the Counseled subjects but not true in tests for each sex.

Thus, the Problem-solving group appeared to be significantly more concerned with a greater number of occupations than did the General Information Treatment group.

B. The nature of information requested by subjects during the counseling interview.

As explained previously, the nature of information requested by subjects (pp. 38-42) during the counseling interview was assessed by rating the number and nature of questions asked. As a result of this, each subject was categorized as requesting information of a specific, semi-specific, or general nature. These data were then summarized (Table 18). The chi-square test of independence was then made to determine the degree of specificity of the subject requests for occupational information.

As shown in Table 15, the number of subjects requesting vocational information was approximately the same for the Problem-solving and the General Information treatments (42 and 41 respectively), whereas 31 subjects requested information from the Accounting Information Treatment. These figures shown as percent of subjects in each treatment, indicate a greater percentage of Problem-solving and General Information Treatment subjects requested counseling than did the Accounting Information Treatment subjects:

Treatment	Percent of Counseled Subjects in each Treatment
Problem-solving	33%
Accounting Information	23
General Information	36

In relating the total number of occupational requests for each treatment (79, 50, and 53 in Table 15) to the number of subjects in each treatment the subjects in the Problem-solving treatment requested, per subject, 17% more occupations than the Accounting Information subjects and 50% as many as the subjects in the General Information Treatment. The average requests per subject by treatment group is as follows:

Problem-solving	1.89
Accounting Information	1.61
Generral Information	1.29

Additional information from Table 15 indicates that the number and percentage of different occupations requested by subjects in the Problem-solving and Accounting Information Treatments are larger than those requested by General Information subjects. The percentage of total different occupations in relation to the number of subjects in each treatment is as follows:

Problem-solving	83%
Accounting Information	81
General Information	61

A significantly greater number of subjects of the Problem-solving Treatment requested specific occupational information than did the subjects of the General Information Treatment (Tables 18 and 19). This significant difference was true for girls but not for boys.

Thus, subjects in the Problem-solving Treatment group appeared to be significantly more concerned with specific questions regarding entrance into an occupation, advancement, etc., than did the General Information Treatment subjects.

No significant differences were found between the Problem-solving and the Accounting Information Treatments.

C. Summary of data regarding Counseled group.

The evidence indicates that the Problem-solving Treatment group requested significantly more occupational information of a specific nature than did the subjects in the General Information Treatment. This suggests a greater desire by the Problem-solving group for information for long-term planning involving such matters as education, training, and future demand, as well as the relationship of the tentative career choice to personality, interest, and ability.

Subjects in the Problem-solving group appeared to be interested in a much greater number of occupations than did the subjects in the Accounting Information Treatment, requesting information concerning at least half-again as many occupations per subject.

A significantly greater number of Problem-solving Treatment subjects requested information regarding different occupations than did the subjects of the General Information Treatment. Thus, the accounting problem-solving material apparently stimulated more information-seeking not only about accounting but about other occupations as well, when compared to the General Information Treatment.

Conclusions

1. Interest in the occupation, *Accountant*, was significantly greater among subjects who received the Problem-solving Treatment than among those who received the General Information Treatment but about equal to those who received the Accounting Information Treatment.

   The actual change for the Problem-solving group was not a particularly large one; that is, the difference between the pre and post means represented a change from the category "I definitely would not want this job" to "I probably would not want this job."

   The occupation, *Accountant*, was the only one of the forty-two occupations listed in which interest was significantly modified in the direction of the experimental hypothesis.

2. Male subjects who received the Problem-solving Treatment showed a significantly greater interest in the occupation, *Accountant*, than did those males who received the General Information Treatment but about equal to those who received the Accounting Information Treatment. No significant differences occurred for female subjects.

3. In analyzing the data for treatment differences by whether or not counseling was requested, those subjects in the Counseled group who had received the Problem-solving Treatment showed a significantly greater interest in the

occupation, Accountant, than did those subjects who had received the General Information Treatment, but about equal to those who received the Accounting Information Treatment. No significant differences occurred for students not requesting counseling.

4. Among subjects from the three treatment groups who requested interviews, the Problem-solving Treatment group females requested significantly more occupational information of a specific nature than did the subjects in the General Information group, but about equal to those who received the Accounting Information Treatment.
5. Among subjects from the three treatment groups who requested interviews, a significantly greater number of Problem-solving Treatment subjects requested information regarding different occupations than did the subjects of the General Information Treatment.
6. The counseled subjects in the Problem-solving Treatment requested, per subject, information regarding one-fifth again the number of occupations as the Accounting Information subjects, and more than one-half again that requested by General Information subjects.
7. Among counseled subjects, occupational information most often requested was that pertaining to Accounting. This was true for the Problem-solving Treatment subjects, the Accounting Information Treatment subjects, and for the counseled subjects as a whole.

8. Data representing measured interest in the occupation, Accountant, failed to differentiate treatment groups.

9. Data representing the amount of information-seeking by subjects failed to differentiate treatment groups.

CHAPTER IV

SUMMARY AND IMPLICATIONS

Summary of Study

This study was designed to test the effect of a set of simulated occupational problems on the occupational attitudes and information-seeking behavior of young people. It was hypothesized that eleventh-grade students who were given an opportunity to solve some simulated occupational problems would engage in more interest-indicative activities than would equivalent subjects given either information about the same occupations or general occupational information. It was further hypothesized that eleventh-grade students who were given an opportunity to solve simulated occupational problems would engage in more independent information-seeking than would equivalent subjects given either information about the same occupations or general occupational information.

The sample consisted of the eleventh-grade class of the high school in an upper-middle-class community. The subjects were randomly assigned to one of three experimental treatments: the Problem-solving Treatment group, which received problems designed to generate interest in accounting; the Accounting Information Treatment group, which was given some information describing the accounting profession; and the General Information Treatment group, which was presented some general information about occupations and the importance of planning one's future career.

Approximately a month before the experimental treatment, two instruments were administered: a survey, listing forty-two representative vocations, each of which was to be ranked on a five-point scale denoting degree of interest; and the Kuder Preference Record, Occupational. The purpose was to determine the degree of general and specific occupational interest before the experimental materials were issued. The same instruments were administered again, approximately a month after the experimental session, to measure effects of the treatments.

The material for the three experimental treatments was arranged in a random sequence and distributed to students in the required English classes. When all students had completed the experimental material, they were provided a form of request for interview with a person trained in vocational guidance at school within a few days.

Within ten days after the experimental session, the students who had requested an appointment, approximately one-third of the experimental sample, were interviewed briefly. Records were kept of the number of students from each of the experimental groups requesting information as well as the nature of their requests.

Two weeks following the experimental treatment, structured interviews were held with all subjects in small groups. A questionnaire designed to elicit self-reporting of information-seeking after the experimental session was administed.

To determine their accuracy, self-reports of approximately one-thirteenth of the subjects in each experimental treatment were randomly chosen for investigation. A research team member investigated self-reported information-seeking activities to determine the validity of the self-report. No reports were found to be false.

The research team consisted of six persons trained and experienced in working with students. Five of these were school psychologists and one, a curriculum consultant. Each was given individual and group instruction for the role he was to play so that treatment and procedure in all treatment groups would be the same.

Results

Summary statements of the findings are as follows:

1. Subjects who experienced the problem-solving material indicated a significantly greater interest in exploring accounting than did subjects who experienced the general information material. This was true for the sample taken as a whole and for subjects who received counseling. It was not true for subjects who did not request counseling.
2. Of the counseled subjects (approximately one-third of the subjects in each treatment) those who experienced the problem-solving material

sought answers to questions involving a greater number and variety of occupations than did those subjects experiencing the general information material but equal to those experiencing the accounting information material. There were no similar sex or treatment differences among subjects who did not request counseling.

3. Of the subjects who requested counseling, those who experienced the problem-solving material requested occupational information of a significantly greater specificity, involving more long-term educational and career concerns, than did those who experienced the general information material but about equal to those experiencing the accounting information material. This was true for the sample taken as a whole. There were no similar sex or treatment differences among subjects who did not request counseling.
4. Although the treatment differences affected accounting interest, as summarized above, interest in 41 other occupations changed no more than would be expected by random fluctuation.
5. The experimental treatments generated differential numbers of requests for information about

accounting among subjects who requested counseling. The subjects in the Problem-solving Treatment inquired about 34 different occupations. One of every eight inquiries pertained to accounting. The subjects in the Accounting Information Treatment inquired about 25 different occupations. One of every seven inquiries pertained directly to accounting. No subjects in the General Information Treatment who requested counseling inquired about accounting.

Limitations

In order to interpret the results and implications of this study, it is necessary to point out some of the limitations inherent in the procedures employed.

1. Nature of the sample

The sample school selected for this study did not represent a random sample of an average comprehensive high school. San Carlos High School's students come, for the most part, from middle to upper-middle class families in an upward-mobile community. School personnel have reported strong patterns of parent and student needs for achievement. This orientation on the part of the students and parents may have influenced the sample subjects to react more intensely to the subject of career choice. In addition, the school itself offers students a greater variety of college and occupational information than is probably typical of high schools. The mean of the eleventh-grade class for the School and College Ability Tests is at the 77th percentile on the national norms. Future studies should include subjects with different socio-economic backgrounds.

2. Research personnel

Although precautions were taken to maintain as much objectivity as possible by the research personnel, it was necessary for the chief investigator to be involved directly in important parts of the experimental process. As listed previously (p. 94), his duties were: (1) holding interviews with students seeking vocational information; (2) proctoring small groups of students completing the *Student Questionnaire*; (3) confirming the student self-reporting in the *Student Questionnaire*; and (4) coordinating arrangements.

Care was taken not to lead subjects into asking for information about occupations other than those which they requested. None of the research personnel was aware of which subjects had received which treatment until after all the experimental processes were completed.

3. Unexpected variables

   Unexpected events sometimes occur which influence the original research design, procedures, or results. Three unforeseen activities occurred during this particular experiment, as follows:

   a. During the pre-test session wherein all subjects were administered the Vocational Survey and the Kuder Preference Record, Occupational -- Form D, it was necessary to include two additional instruments unrelated to the study. This had the effect of increasing time for completion, in some cases, to more than a single class-period or to rushing students through the process. Crowding additional material into the one class period might have affected the administration as well as the reception and response of the students. In addition, this unrelated research study reduced the anticipated sample by twenty-four subjects.

   b. A more important activity having an effect on the study was the fact that 74 eleventh graders in three English classes were given a research assignment by their teacher which involved making a vocational choice, the investigation of which involved information-seeking behavior similar to that in this research design.

For that reason, a decision was made to exclude the data received from the English-class students from that of the main treatment groups.

c. Another problem was an unexpectedly large number of absences, involving different students, for the pre and post sessions and the experimental session. As it was necessary that the same students be present for all three sessions, the final experimental sample was further reduced.

4. Treatment groups -- experimental material

The material for the General Information Treatment was developed to contain no specific occupational information and to concentrate on general information about occupational exploration and the importance of planning one's future career. The chief objective of presenting this general information was to provide a control against which the problem-solving accounting material could be compared.

Since the General Information Treatment contained career information, however, it was less a control group than an active third experimental treatment. The comparisons, therefore, were between problem-solving material and information material about a specific occupation (accounting) and general, non-specific career informational material. It probably would have been wise to have included an additional inactive control treatment with subjects receiving either no treatment materials whatsoever or non-occupational materials.

5. Timing of experiment

The experiment was purposely given at a time when students were probably more concerned with their futures than at other times of the year. Registration for the senior year had just taken place; thinking about education or occupations after high school was at a higher level than in the early part of the school year, and students were being made aware that all should be in order to insure graduation. The limitation was that this was an atypical although propitious time to stimulate the interest of students in occupational information.

6. Criterion measure

The chief criterion for post-treatment effect was information-seeking as measured by the Student Questionnaire and records of those requesting counseling. Data from these measures were received no later than three weeks after the experimental treatment. No longer-term effects, therefore, were measured. Even an extension of a few months would have enabled the investigator to receive much better information regarding summer jobs, school and job visits, etc.

Administration of the Student Questionnaire required ten days due to lack of sufficient room space within the school for small group meetings. The lack of space was a problem throughout the study and should be an important criterion for the selection of a school in a study of this type. The time-lapse may well have caused a variation in the reported attitudes of students.

Interest in and attitude toward accounting, specifically, and to other occupations, generally, were also of interest. One instrument, the Kuder Preference Record -- Form D, was selected to measure interest in activities like those of accountants. It was felt that this was an appropriate instrument, but it should be noted that though recommended for research and reviewed favorably, it is still relatively new and validation data are still being gathered.

7. Counseled subjects

   Although significant results were obtained with counseled subjects, it should be remembered that the subjects were volunteers and not a random sample. An experimental design which set up experimental and control groups for volunteers, for example, would be a suggested next step in any related research project.

Implications

The present investigation suggests several significant implications for motivating young people to explore career potentialities, especially in secondary schools, and for further research study. Such implications can be drawn from both the negative and positive results of the present study:

1. One of the most consistent treatment differences seemed to be centered in the group of subjects who requested and received additional occupational information or counseling. This implication is restricted, therefore, to those who were motivated to seek occupational information.

None of the results of the present study showed that any single treatment group requested more occupational information than any other group -- in fact, the numbers were approximately equal from each treatment group. However, the fact that one-third of the eleventh-grade students requested additional information does suggest a substantial degree of effectiveness for the experimental and control material.

The school has an active career program for eleventh graders, and yet, according to the counselors, a very small percentage of the counselees had requested or discussed vocational information with them prior to the experiment. After the treatment, all counselors for the eleventh graders remarked on the greatly increased number of their counselees who requested more information regarding planning for the future.

Some other reasons for the increased activity may be that the material was interesting, that this study occurred at a propitious time in the semester at the right stage of the students' development, and that an outside-of-school "expert" was available for information-giving.

Increased activity on the part of the subjects to learn more about themselves was observed. It would be worthwhile to investigate the exact factors contributing to this apparent effect.

2. One-third of the eleventh-grade students requested further occupational information from an outside person, despite the fact that the school's counseling staff is good and that occupational information is readily available.

   This suggests two questions: (1) Are school counseling procedures or interview techniques for motivating students to seek occupational information as effective as they should and can be? (2) What significance can be attached to the fact that an outside counselor was doing the interviewing?

3. Presentation of material related to a specific occupation (accounting) resulted in requests for information about a larger number and variety of occupations than did the presentation of general, non-specific, occupational material. A possible reason for this -- and an implication for further research -- is that the more specific the material is the more effective it will be in generating exploratory responses.

4. Future experimenters might investigate combinations of techniques. The lifelike materials, counseling, the classroom assignment, and other techniques might have some effect on the student's behavior. It would be worthwhile to see which is the most effective combination of these.
5. If the presentation of experimental lifelike material involving a single occupation, accounting, had some significant effects on information-seeking, might it not be worthwhile to consider developing experimental material of a broader, or "cluster-like" nature? For example, instead of presenting material for a single occupation would it not be sounder to develop lifelike material for those interested in learning about problems actually incurred by businessmen generally? The idea behind this is that the concepts and the nature of any single occupation have been changing and will continue to change rapidly in our culture. An occupation studied today, if the past is a guide, may easily have ceased to be of significance when the student reaches the labor market. It appears reasonable to assume that the chief concepts and problems inherent in a cluster of occupations, such as "business" or "health" will remain pertinent in tomorrow's world.

Furthermore, this would afford the student the advantage of sufficient general direction in terms of his interests, abilities, perceptions, etc., and still allow him the opportunity to investigate and explore other broad occupational fields.

6. One of the aims of the material for the Problem-solving Treatment was to involve the subjects physically and thus emotionally in the tasks to be performed. Therefore, the problem involved working with simulated checks, bookkeeping records, and accounting forms.

   This is certainly not the only way to involve students, nor necessarily the best way. Three-dimensional material using physical models of the task, focus, or equipment, for example, are possibilities for future materials. Film strips and records to demonstrate the problem and involve the students might be effective. Combinations of the above or other techniques can be tried.

   One of the basic needs of this type of research is the development of material using the problem-solving method to the greatest extent so that the research results can reflect the efficacy of this method of motivating students.

7. The whole matter of time and timing is important. What time of year should the materials be given? At what age would the materials be most effective for students? Should the material be given before, during, or after counseling? Should it be given more than once? Should the material be given in conjunction with similar materials of other occupations or clusters of occupations? What are the longer-term effects of the introduction of this material?

8. The interesting results from the Counseled group in this study may have important implications for making changes in counselor orientation and emphasis. Counselors have found it difficult to succeed in reaching and helping most students because of the sheer problem of student numbers. This study suggests the possibility of working successfully with purposely-developed occupational materials, "special" counselors, and an individual and group counseling method which helps students to take a more active role in seeking information about their own educational and vocational alternatives.

BIBLIOGRAPHY

Accounting May be the Right Field for You. American Institute of Certified Public Accountants, 1961.

Barnette, W. Leslie Jr. Occupational Aptitude Patterns of Selected Groups of Counseled Veterans. Psychol. Monogr., No. 65, 1951.

Baer, Max F., and Roeber, Edward C. Occupational Information, Science Research Associates, 1958, p. 468.

Barry, Ruth, and Wolfe, Beverly. Epitaph for Vocational Guidance, New York: Bureau of Publications, Teachers College, Columbia University, 1962.

Berdie, Ralph F. Factors Related to Vocational Interests, Psychol. Bull., 41, 1944, 137-57.

Bordin, E. S., and Wilson, E. H. Change of Interest as a Function of Shift in Curricular Orientation, Educ. Psychol. Measurement, 13, 1953, 297-307.

Brayfield, Arthur. Putting Occupational Information Across, Educ. & Psych. Measurement, 8, 1948, 485-495.

Career Information Guide, Career Guidance Center, Supt. of San Mateo County Schools in cooperation with the California Industry Education Council, San Mateo County Chapter, 1964.

Carter, H. D. Vocational Interests and Job Orientation, Applied Psychol. Monogr. No. 2, 1944.

Cass, James and Birnbaum, Max. Comparative Guide to American Colleges, New York: Harper and Row, 1964.

Child, I. L., and Whiting, J. Determinants of Level of Aspiration: Evidence from Everyday Life, J. Abnormal and Social Psych., 1949, 44, 303-314.

Darley, J. G., and Hagenah, Theda. Vocational Interest Measurement, Theory and Practice, Minneapolis: University of Minnesota Press, 1955.

Dixon, W. J. Biomedical Computer Programs, Los Angeles: Univ. of California at Los Angeles, 1964.

Eskow, Seymour and Jarvie, Lawrence L. Barron's Guide to the Two-Year Colleges, Great Neck, N. Y.: Barron's Educational Series, Inc., 1960.

Fryer, Douglas H. The Measurement of Interests in Relation to Human Adjustment, Holt, 1931.

Gage, N. L. (Ed.). Handbook of Research on Teaching, American Educational Research Association, N.E.A., Chicago: Rand McNally & Co., 1963.

Garrett, Henry E. Statistics in Psychology and Education, New York: Longmans, Green and Co., 1957.

Guenther, W. C. Analysis of Variance, New York: Prentice-Hall Co., Inc., 1964.

Hahn, Milton E., and MacLean, Malcolm. Counseling Psychology, New York: McGraw-Hill Book Co., Inc., 1955, 47-49.

Holland, J. L. Major Programs of Research on Vocational Behavior. In Henry Borow (ed.), Man in a World at Work, Boston: Houghton Mifflin, 1964, 259-284.

Hoppock, R. Occupational Information, New York: McGraw Hill, 1957.

Hummel, Raymond. Vocational Developmental Theory and Guidance Practice. J. National Association of Women Deans and Counselors, 1954, 18, 13-18.

Humphreys, J. Anthony. Choosing Your Career. Chicago: Science Research Associates, 1964.

Hutchins, Robert M. The University of Utopia. Chicago: The University of Chicago Press, 1964.

Jacobsem, Joseph. A Directory of Occupation-Centered Curriculums in California Junior Colleges and Schools for Adults. California State Department of Education, 1962.

Jones, Brian. The Job Ahead, Occupation Research Project, City College of San Mateo, 1964.

Jones, Brian (ed.). Santa Clara County Occupational Outlook Handbook, Santa Clara County Office of Education, San Jose, Calif., 1964.

Keister, M. E. The Behavior of Young Children in Failure. In R. G. Barker, J. S. Kounin, and H. F. Wright, *Child Behavior and Development*, New York: McGraw-Hill Book Co., 1943, 429-40.

Kitch, D. E., and McCreary, W. H. *The School Counselor: His Work and Training*, Bulletin of California State Department of Education, 1951.

Klausmeier, Herbert J. *Learning and Human Abilities: Educational Psychology*, New York: Harper, 1961, 209, 330-32.

Krumboltz, J. D., & Schroeder, W. W. Promoting Career Planning through Reinforcement and Models, *Personnel Guidance Journal*, in press.

Krumboltz, J. D., & Thoresen, C. E. The Effects of Behavioral Counseling in Group and Individual Settings on Information-Seeking Behavior, *J. Counseling Psychology*, in press.

Kuhlen, Raymond G. Adolescence, in Chester W. Harris (ed.), *Encyclopedia of Educational Research*, New York: MacMillan Co., 1960, 28.

Laird, D. S., and Cumbree, C. F. *Experiment in Modifying Ethnic* Attitudes of College Students, *J. Ed. Sociology*, 1952, 25, 401-409.

Lantz, B. Some Dynamic Aspects of Success and Failure. *Psych. Monographs*, 1945, 271.

Layton, Wilbur L. Theory and Research on the Strong Vocational Interest Blank: a Conference Report, *J. Counsel. Psych.*, 1955.

Lev, Joseph and Walker, Helen. *Statistical Inference*, New York: Holt, Rinehart and Winston, 1953.

Lorge, I. *et al.* Solutions by Teams and by Individuals to a Field Problem at Different Levels of Reality, *J. Ed. Psych.*, 1955, 46, 17-24.

Lovejoy, Clarence E. *Lovejoy's College Guide*, New York: Simon and Schuster, 1965.

McDonald, F. J. *Educational Psychology*, San Francisco: Wadsworth, 1959.

Marx, Melvin H. Motivation, in Chester W. Harris (ed), *Encyclopedia of Educational Research*, New York: MacMillan Co., 1960, 896-7.

Matteson, R. W. Experience-Interest Relationships as Measured by an Activity Check List, J. Counsel. Psychol., 1955, 2, 13-16.

May, M. A., and Lumsdaine, A. A. Learning from Films, New Haven: Yale University Press, 1958.

Montgomery, Robert H. Auditing, New York: Ronald Press, 1949.

Mooney, Ross L. Surveying High School Student Problems by Means of a Problem Check List, J. Ed. Research, 1942, 21, 57-69.

Paulson, Blanche B. The Use of Occupational Information for the Junior High School Age Group, Personnel and Guidance Journal, 1960, 124-27.

Paulson, Blanche B. and Kuder, G. Frederic. Discovering your Real Interests (revised edition). Chicago: Science Research Associates, 1965.

Peters, H. J., and Shertzer, B. Guidance: Program Development and Management. Chas. E. Merrill Books, Inc., Ohio, 1963, 227-238.

Plowman, L., and Stroud, J. B. Effect of Informing Pupils of the Correctness of their Responses to Objective Test Questions, J. Educ. Research, 1942, 36, 16-20.

Pritchard, David H. The Occupational Exploration Process: Some Operational Implications, Pers. and Guid. J., 1962, 674-680.

Rusalem, Herbert. New Insights on the Role of Occupational Information in Counseling, J. Counsel. Psychol., 1954, 1, 84-88.

Roe, Anne. The Psychology of Occupations, New York: John Wiley, 1956, 23-39.

Samler, Joseph. Psycho-Social Aspects of Work, a Critique of Occupational Information, Pers. and Guid. J., 1961, Feb., 458-465.

Scheffe, Henry. The Analysis of Variance, New York: John Wiley, 1961.

Schmidt, J. L., and Rothney, J. W. Variability of Vocational Choices of High School Students, Pers. Guid. J., 1955, 34, 142-46.

Sears, P. S. Levels of Aspiration in Academically Successful and Unsuccessful Children, J. Abnormal and Soc. Psych., 1940, 35, 498-536.

Sinick, D., and Hoppock, R. Research on the Teaching of Occupations, Pers. and Guid. J., Oct. 1961, 164-168.

Strang, Ruth. Use in Counseling of Information about Vocations, The School Review, 1945, 528-529.

Strong, E. K., Jr. Vocational Interest 18 Years after College, Minneapolis: University of Minnesota Press, 1955.

Super, Donald E. Appraising Vocational Fitness by Means of Psychological Tests, New York: Harper, 1949, 431-36, 459-60.

Super, Donald E. Interests, in Chester W. Harris (ed.), Encyclopedia of Educational Research, New York: MacMillan Co., 1960, 732.

Super, Donald E. A Theory of Vocational Development. The Amer. Psych., 1953, 8, 185-190.

Terman, Lewis M., and Oden, Melita H. The Gifted Child Grows Up, Stanford: Stanford University Press, 1947.

Tyler, L. E., The Development of 'Vocational Interests', the Organization of Likes and Dislikes in Ten-Year Old Children, J. Genetic Psych., 1955, 86, 33-44.

United States Department of of Labor. Occupational Outlook Handbook, Washington, D.C., 1964.

Venn, Grant. Man Education and Work, Postsecondary Vocational and Technical Education, American Council on Education, Washington, D. C., 1964.

Wimmer, Nancy C. College: A Grade-School Decision, in Guiding Children as They Grow, National Congress of Parents and Teachers, 1959, 137-43.

Wood, Helen. The Manpower Future -- Its Challenges for Vocational Guidance, in Lester D. and Alice Crow (ed.), Readings in Guidance, New York: David McKay Co., 1962, 314-321.

Wrenn, C. G. The Counselor in a Changing World, Washington, D.C.: American Personnel and Guidance Association, 1962.

Yabroff, William W. Two Experiments in Teaching Decision-Making. A project sponsored by the National Defense Education Act. Palo Alto Unified School System, 1964.

APPENDIX A

FORMS IN EXPERIMENT REQUESTING SUBJECT RESPONSE

A-1 Vocational Survey

A-2 Student Questionnaire (and supporting forms)

A-3 Appointment Request Form

A-4 Questionnaires to Junior Students about Academic Success

VOCATIONAL SURVEY

Print Name: ______________________________
First Last

Date: ______________ Sex: Boy___ Girl___

This is a check list about your feelings about certain jobs. This check list is for research and is confidential. It will not become a part of your school record. Please be open and honest in answering the questions. Thank you for your cooperation.

Below is a list of jobs or vocations. For each job you are to make a single choice by writing, in the space provided, the letter of the statement that best expresses your feelings about the job or vocation.

A. I definitely want this job.

B. I am strongly interested in this job.

C. I am somewhat interested in this job.

D. I probably would not want this job.

E. I definitely would not want this job.

1. Nurse ______
2. Waiter or waitress ______
3. Teacher ______
4. Stewardess ______
5. Printer ______

22. Executive ______
23. Military service career ______
24. Mechanic ______
25. Engineer ______
26. Manager of office ______

Vocational Survey (Cont'd)

6. Scientist ______
7. Secretary ______
8. Policeman ______
9. Professor ______
10. Salesman ______
11. Plumber ______
12. Accountant ______
13. Lawyer ______
14. Owner of store ______
15. Draftsman ______
16. Repairman ______
17. Farmer ______
18. Artist ______
19. Carpenter ______
20. Bus or truck driver ______
21. Miner ______
27. Foreman ______
28. Doctor ______
29. Librarian ______
30. Fireman ______
31. Dentist ______
32. Insurance agent ______
33. Factory worker ______
34. Clergyman ______
35. Gardener ______
36. Airplane pilot ______
37. Cattle rancher ______
38. Actor or actress ______
39. Forester ______
40. Barber or beautician ______
41. Electrician ______
42. Writer ______

STUDENT QUESTIONNAIRE

Date: ______________ Please print name: __________________________
First Last

YES NO

a. What high school subjects have you enjoyed the most since the 8th grade?

____

b. What high school subjects have you enjoyed the least since the 8th grade?

____

c. Are you considering attending any particular schools or colleges after you get through high school? ☐ ☐
Which ones are you considering?

____

d. What occupations or vocations are you considering as a life-time career?

First choice __________ Second __________

Third __________

SECTION A: HAVE YOU TALKED WITH ANY OF THE FOLLOWING PEOPLE SINCE MONDAY, APRIL 27? YES NO

(1) A person who is now working at the type of job you are considering? ☐ ☐ (1)

(2) A person who has worked in the past at the type you are considering? ☐ ☐ (2)

(3) A person who knows about the type of job you are considering? (other than the above persons) ☐ ☐ (3)

		YES	NO	
(4)	A person who is presently attending any of the schools you are interested in attending?	☐	☐	(4)
(5)	A person who has attended one of the schools you are interested in attending?	☐	☐	(5)
(6)	A person who knows about schools and colleges even though he didn't attend one of the schools which interest you?	☐	☐	(6)

SECTION B: HAVE YOU READ, WRITTEN, OR LOOKED AT ANY OF THE FOLLOWING MATERIALS SINCE MONDAY, APRIL 27?

		YES	NO	
(7)	Have you written any place to ask for a pamphlet, college catalog, or bulletin about any job, educational question, etc.?	☐	☐	(7)
(8)	Any material, such as pamphlets, booklets, bulletin board posters, or magazines about the occupations you are considering?	☐	☐	(8)
(9)	Any material, such as pamphlets, booklets, bulletin board posters or magazines about occupations other than the ones you are considering?	☐	☐	(9)
(10)	Any books, magazines, or pamphlets telling about getting admitted to schools and colleges or about the schools or colleges you are interested in attending?	☐	☐	(10)
(11)	Any material (bought, borrowed, checked out of library) about getting into schools or colleges or describing schools or colleges you are interested in attending that you have not read yet?	☐	☐	(11)
(12)	Have you seen any TV programs, fair exhibits, or shows, or heard any radio programs since Monday, April 27, about the occupations or schools and colleges that interest you?	☐	☐	(12)

Student Questionnaire (Cont'd.)

SECTION C: HAVE YOU VISITED OR MADE PLANS TO VISIT ANY OF THE FOLLOWING SINCE MONDAY, APRIL 27?

	YES	NO	
(13) Have you visited any of the schools or colleges that you are interested in attending?	☐	☐	(13)
(14) Have you made definite plans to visit any of them since Monday, April 27th?	☐	☐	(14)
(15) Have you made an on-the-job visit to see what the occupation that you are considering as a possible career is like?	☐	☐	(15)
(16) Have you made any definite plans to visit and observe people working in these occupations?	☐	☐	(16)

SECTION D: HAVE YOU DONE ANY OF THE FOLLOWING SINCE MONDAY, APRIL 27?

	YES	NO	
(17) Have you looked into or have definite plans to look into getting a summer job that is connected with an occupation you are considering?	☐	☐	(17)
(18) Have you looked into or have definite plans to look into a part-time or summer job to make money for future school or college expenses?	☐	☐	(18)
(19) Have you inquired or do you have plans to find out about a part-time job that is connected with an occupation that you are considering?	☐	☐	(19)
How much time did you spend doing homework outside of school since Monday, April 27?			
(20) About the same as usual?	☐	☐	(20)
(21) Less than usual?	☐	☐	(21)
(22) More than usual?	☐	☐	(22)

Student Questionnaire (Cont'd.)

SECTION B: OTHER IMPORTANT INFORMATION

YES NO

(23) Have you taken or made definite plans to take any tests, other than regular classroom tests, regarding your interests, ability, or achievement, since Monday, April 27? ☐ ☐ (23)

(24) Have you talked to your high school counselor for the purpose of finding out more about yourself or your plans after high school, since Monday, April 27? ☐ ☐ (24)

e. What is your father's (guardian) occupation?

____

f. What is the highest grade of school he completed?

____

g. Does your mother work outside of the home? ☐ ☐

h. What does she do, if the above answer is yes?

____

i. What is the highest grade of school she has completed?

____

j. Have you had any regular summer or part-time job, that is for more than two weeks, either with or without pay? ☐ ☐

FORM A STUDENT QUESTIONNAIRE

Please print name: ____________________________
First Last

WITH WHOM HAVE YOU TALKED?
(Section A, Questions 1-6)

1. What did you talk about? Schools? ☐ Occupations? ☐
   Other? ☐ ______________________
   Please specify

2. What was the name of the person with whom you talked?
   ____

3. What is his address or how can he be reached? ________________
   ____

4. About how many minutes did you talk with him? Under 15 ☐ 15-60 ☐
   Over 60 ☐

5. Was your talk by telephone ☐, or in person? ☐

6. What was the date you talked with him? ________________

7. What is the name of the institution ________________
   and/or occupation ________________
   to which this person is directly or indirectly connected?

8. Is this person on the high school staff ☐, a relative ☐,
   or other? ☐ ________________

9. What was your main purpose in talking with this person? ________
   ____

10. What do you feel is the most important fact you learned from the conversation? ________________________

Form A for Question No. ___

FORM B STUDENT QUESTIONNAIRE

Please print name: ____________________

WHAT HAVE YOU READ, LOOKED AT, OR WRITTEN?
(Section B, Questions 7-12)

1. What was the name of the material? ____________________

2. Who wrote the material? ____________________

3. Was it checked out of the library? ☐
   or obtained as permanent possession ☐
   or borrowed from someone ☐
   or requested by mail ☐

4. From whom did you get the material? Name: ____________________
   Address: ____________________

5. What was the main subject of the material? ____________________

6. What was the most important fact you learned? ____________________
   ____

Form B for Question No. ______

FORM C STUDENT QUESTIONNAIRE

Please print name: ______________________________
First Last

YOUR VISITS
(Section C, Questions 13-16)

1. Was your visit definitely made ☐ , or is it planned for later? ☐

2. Is your visit related to your educational plans ☐ , or to your vocational plans? ☐

3. If your visit is for your vocational plans, what is the vocation?

____

4. What is the name of the person and/or institution visited (or planned to visit)?

Person's name: ____________________ Position: ____________________

Institution: ____________________ Address: ____________________

5. How many hours did you spend with this person?

1/4	1/2	3/4	1	2	3	Over 3
☐	☐	☐	☐	☐	☐	☐

6. What was (will be) the date of your visit? ____________________

7. What is the most important fact you learned (or hope to learn) from your visit?

____

Form C for Question No. ______

FORM D STUDENT QUESTIONNAIRE

Please print name: ______________________
First Last

YOUR PLANS FOR A SUMMER OR PART-TIME JOB
(Section D, Questions 17-19)

1. Do you definitely have a summer or part-time job ☐, or do you have definite plans to obtain a job? ☐

2. Are you paid ☐, or do you volunteer your services? ☐

3. What are you to do on your job? ______________________

4. What is the place of your employment? Name: ______________________

Address: ______________________

5. What person did you contact to get the job or make plans to get the job?

Name: ______________________

Address: ______________________
(or how he can be reached)

6. When did you first talk with this person about a job?

Date: ______________

7. How is the job associated with your chief vocational interests (if at all)?

____

Form D for Question No. ______

FORM E STUDENT QUESTIONNAIRE

Please print name: ______________________________
First Last

OTHER IMPORTANT INFORMATION
(Section E, Questions 23-24)

1. What was the topic you discussed with this person?

____

2. What is this person's name? ______________________

3. What is his address? ____________________________

4. How many minutes did you talk with him? Under 15 ☐ 15-60 ☐ Over 60 ☐

5. When did you talk with him? Date: ________________

6. Did you talk with him in person ☐, or by telephone ☐

7. Is this person on the high school staff? ☐
   a relative ☐
   or other ☐ ________________
   Please specify

8. What was the most important thing you learned?

____

Form E for Question No. _____

APPOINTMENT REQUEST FORM

April 26, 1965

TO: SAN CARLOS HIGH SCHOOL JUNIORS

If you wish more information about possible career choices for you, please fill out this form and return it as instructed below.

Mr. Sheppard, trained in the vocational field at Stanford University, will be at San Carlos High School this week. An appointment can be set with him, at your request, for either this Wednesday, Thursday, or Friday.

- -

1. Your name (please print) ______________________________
First Last

2. Day you prefer for appointment: Wednesday ☐ ; Thursday ☐ ;
Friday ☐ .

3. In order to be of the greatest assistance to you, it would be helpful if you would explain briefly below, what vocational information you wish to discuss with Mr. Sheppard. (You need not fill in this section, however, if you prefer not to.)

____

____

4. Return this Appointment Request Form either:

   a. This period (English class, Monday, April 26) to the person who gave it to you, or

   b. Not later than Thursday afternoon, to the Head Counselor's secretary, Mrs. Jeri Worley, in the Administration Building.

QUESTIONNAIRE I

March, 1965

Junior Students:

Many of you are interested in looking into what you plan to do when you finish high school. Those students who are interested may talk with a Special Counselor from Stanford University about their post-high school plans and ways of getting information relevant to these. Because of the large numbers, all students may not see this counselor. Please indicate below whether or not you are interested in talking with this Special Counselor and then complete all questions.

Thank you.

Name ____________________________________

I am interested in talking with a Special Counselor ______

I am not interested in talking with a Special Counselor _____

What do you consider doing after High School?

Work (What kind? Be specific) ______________________

Military service ____________

Junior College (Two-year program) ___________

State College (Four-year program) ___________

University (Four-year program) ___________

Training school (What kind?) ______________________

I don't know __________

Other ____

HIGH SCHOOL ACADEMIC SURVEY

NAME ______________________________

DATE ______________________________

This is a check list about academic success and about you. The check list is for research and is confidential. It will not become a part of your permanent record. Answer the questions below. Please be open and honest in answering the questions. Thank you for your cooperation.

1. If you divided students into three groups in terms of academic success, where would you place yourself?

High success _____ Middle success _____ Low success _____

2. To your best ability, estimate your grade point average and circle the grade:

A A- B+ B- C+ C C- D+ D- F

3. Are you taking a college preparatory course? Yes _____ No _____

4. On the average, how many hours do you spend on homework each week day? _______

5. How many semesters have you been eligible for membership in California Scholarship Federation? _______

6. How often do you voluntarily participate in class discussions?

Almost never _____ Seldom _____ Sometimes _____ Often _____ Almost always _____

High School Academic Survey (Cont'd.)

7. How much academic work do you do on your own which is not required work?

None _____ Some _____ Much _____

8. Have you been in any advanced standing classes? If so, please list.

No ______ Yes _______ ________________________________

9. What are your plans after graduation?

Junior College _____ State College ______ University ____

Military service _______ Job (what kind?) _______________

10. Please list any other factors that you feel important in being academically successful.

APPENDIX B

COMMUNICATIONS TO SCHOOL AND DISTRICT

B-1 Letter to Superintendent
B-2 Memorandum to Teachers Regarding Experimental Session
B-3 Memorandum to Faculty Regarding Student Passes (I)
B-4 Memorandum to Faculty Regarding Student Passes (II)
B-5 Memorandum to Faculty Regarding Post-Session

LETTER TO SUPERINTENDENT

February 1, 1965

Rex Turner, Superintendent
Sequoia Union High School District
Redwood City, California

Dear Dr. Turner:

As you know, I have had several introductory discussions with Dr. Van Dalsem concerning the possibility of using some Sequoia Union High School District student groups in the design of my doctoral dissertation.

It is my understanding, that both Dr. Van Dalsem and the administrators of San Carlos High School are interested in participating in this experiment, providing, of course, that the school routine and the regular education of the students involved is not appreciably interrupted.

This is certainly my desire and intent and I am certain there will be no difficulty in this regard. In fact, the less there is in the experiment that is unusual to the school environment, the greater is the possible validity.

Having obtained preliminary agreement of the school persons who may be involved, I should like at this time to request your own approval, before I contact your personnel any further.

Although, I know that Dr. Van Dalsem has briefly explained my project to you, I am enclosing an abstract of it for your perusal. If you desire further information or explanation I shall be happy to give this to you.

It was a nice surprise seeing you, if merely to say hello, the other day. I hope the coming bond election is a successful one for you and the district.

Very truly yours,

Lawrence E. Sheppard
407 Durham Street
Menlo Park, California

encl. 1
   Abstract of Dissertation Proposal
cc: Dr. Van Dalsem

MEMORANDUM TO TEACHERS REGARDING EXPERIMENTAL SESSION

Wednesday, April 21, 1965

TO: English III Teachers

Monday, April 26, your English III classes will be involved in Mr. Sheppard's vocational project. It will only be necessary for you to be in your room at the beginning of each period, to take roll, and the last 10 or 15 minutes of the period. You are welcome, of course, to remain the full period, if you wish.

J. Polon
Head Counselor

MEMORANDUM TO FACULTY REGARDING STUDENT PASSES -- I

April 27, 1965

SUBJECT: Passes for Junior Students

TO: Faculty

A large number of junior students have expressed an interest in exploring possible career choices for themselves. Consequently, in the next few weeks, pass requests will be put in your box for some of your students.

At no time will more than one of your students be scheduled to leave your class during any one period. If your lesson plan demands keeping the students, please do so and other arrangements will be made.

You may, incidentally, be asked questions by students regarding certain careers for them, as many of your names will be given as good sources of information.

Thank you for your cooperation. If you have any questions please let me know.

Larry Sheppard

MEMORANDUM TO FACULTY REGARDING

STUDENT PASSES -- II

Tuesday, May 11, 1965

Dear Teacher:

As you may know, our Junior Class is participating in a research project, coordinated by Mr. Sheppard, to find out better ways of generating student interest in exploring career choices.

An important part of this project will be taking place during the next eight or nine school days. If it is possible, we would appreciate your honoring the pass requests you receive from me during this period of time. Only when scheduling makes it impossible will more than one student be taken from your class at any one period.

Thank you for your cooperation.

Julian Polon
Head Counselor

MEMORANDUM TO FACULTY REGARDING

POST-SESSION

Friday, May 14, 1965

Dear U.S. History Teachers:

This is to remind you that on Monday, May 27, your junior class U.S. History students are scheduled for their second series of vocational projects. It is anticipated that the full period will not be necessary to use by the proctors. Therefore, in addition to the roll taking at the beginning of class, it might be well for you to check in about ten or fifteen minutes before the end of the period.

Thank you again for your past and present cooperation.

Larry Sheppard

APPENDIX C

INSTRUCTIONS TO PROCTORS

C-1 Pre-Session Instructions

C-2 Experimental Session Instructions

C-3 Post-Session Instructions

C-4 Small Group Interviews Instructions for Student Questionnaire

C-5 Sample Schedule for Proctors

PRE-SESSION INSTRUCTIONS

INSTRUCTIONS FOR PROCTORS: Tuesday, March 30, 1965
San Carlos High School

1. Motivate class to the worth of participating in this research project (don't use word "tests") and that the results, which will be available to them if they wish, will be helpful to them in their career choices.

2. Pass out (1) special pencils (2) Vocational Survey (legal size goldenrod). Instruct them to print name, etc. You might put date on the board. Either read instructions with them or let them start as you see fit.

3. Pass through the room to see that they are following instructions. Try to have this completed and collected (not the pencils) in 5-10 minutes.

4. Pass out Kuder answer sheet and have them fill identification line completely.

5. Tell them not to start until you tell them. Not to open Kuder booklet until you say so. Pass the booklets out.

6. Have them open to first page and read aloud the instructions with them.

7. Demonstrate use of answer sheet. Have them begin, telling them to respond to each answer according to their "first impressions" rather than pondering over their choices.

8. Go through the room a number of times to check use of answer sheets, etc.

9. Kuder should take no more than one-half hour. You will need about 10 minutes for the next surveys. Watch your time. If you can, collect all Kuders at the same time: answer sheets separately from booklets. If you cannot, have them bring them up as they finish and in turn give out:

    1. Academic survey to all boys and girls.

    2. "Junior students" sheet to boys only.

Pre-Session Instructions (Cont'd)

10. If time is short make sure "Junior students" sheet is done by boys first. Tell those who have not finished to bring it in to teacher tomorrow.

11. BE SURE TO COLLECT PENCILS AT END OF CLASS FROM EVERYONE. YOU HAVE ONLY A FEW EXTRA.

Your Room: H-9
Teacher: Mr. Jackson
Number: 30 students
Period: 6th
Time: 1:05-2:00

12. Return all material, separated, please to L. Sheppard in Room E-5.

EXPERIMENTAL SESSION INSTRUCTIONS

INSTRUCTIONS FOR PROCTORS:

Note:

-- The experiment will take anywhere between one-half hour and forty-five minutes. The teacher, therefore, should be in the class for roll call at the start and toward the end.

-- You will have separate collections of booklets for each of your classes arranged in a specified random way. Use only the booklets, therefore, designated for that particular class.

1. Pass out the kits and pencils to the students starting from the beginning of each row. Ask them not to open the kits until you tell them.

2. Explain in your own words if you wish but be sure to include all the points of the following:

   > We are interested in having you try out some new materials about occupations. You are not all receiving identical booklets because we are trying out different versions of this material.
   >
   > Please read the material in your booklet carefully and follow the instructions exactly. You will be asked to write your answers to some questions which you will find explained when you come to the proper spot.
   >
   > If you have any questions about what to do as you are going through the booklet, please raise your hand and I shall help you. You may now open your kit and start in.

3. After all are well started, go through the room to check their progress. Feel free to answer any questions unless they have a direct bearing on the problem-solving aspect of the material. They should have a successful, enjoyable experience if at all possible.

4. When most seem to be finishing, instruct them on completion, to put their closed booklet on the upper right hand corner

of their desk with the completed Report Form on top of it. (You may write this on the blackboard.)

5. Collect each of the Report Forms separately, making sure there is proper identification on each. Then have the booklets passed to the front of room. Put them aside.

6. Before you pass out the Appointment Request Form, say something like this:

> If you wish more information about the occupations which you just worked on -- or other career information in which you are interested -- please fill out the form which I shall pass out to you. This will allow you to set up an appointment with a person trained in the vocational field on this Wednesday, Thursday, or Friday.

Note:

You will have enough booklets for your morning classes only. It may be necessary to collect the booklets already used, between periods to get them in order for the afternoon.

After 3rd period, please return all Report Forms and the remaining booklets to E-5. Before 5th period, your afternoon booklets will be ready for you.

POST-SESSION INSTRUCTIONS

Suggestions for Administering Vocational Survey and Kuder
May 27, 1965

1. Wait a few minutes for latecomers.

2. Introduce self as one of coordinators of the high school career project in which they have been involved this last month or so in their U.S. History and English classes.

3. Explain that today will be the final part of this project and that it will be similar to the first part. One's reactions and attitudes change over a period of time so in order to get the best results possible for both you, individually, and for the project information, we are asking you to respond again to the forms I shall pass out to you.

4. Remember, that although the total group information may not be available to you soon -- as this is a two or three year project -- your Kuder results will be in your counselor's hands by the beginning of the next semester.

5. Pass out pencils to each and then the Vocational Survey. Make sure everyone prints his name and writes in the data. If instructions as to how to respond to the survey seem necessary, explain.

6. Check through the room to see that all are replying, according to instructions.

7. After you collect the Survey, when all have finished, pass out the Kuder answer sheets. Have class print name, etc., then tell them to wait for your instructions.

8. Pass out Kuder booklets, asking students to leave them closed on their desks.

   a. Open book to first page. Either read aloud with them or explain in own words (remember they have done this before). Demonstrate the correct use of the answer sheet.

Post-Session Instructions (Cont'd.)

9. Check Survey while Kuder is being taken for proper identification, etc. Please alphabetize if you have time.

10. Check through class to see that Kuder is being used correctly.

11. Collect answer sheets and manuals separately.

12. Collect pencils.

13. Please thank students for their interest and cooperation during this entire project. It has been a pleasure working with them and we feel the knowledge gained through their help will benefit them individually and high school students in general.

1st Period: 8:15-9:10
2nd Period: 9:15-10:10
3rd Period: 10-15-11:13
5th Period: 12:05-1:00
6th Period: 1:05-2:00
7th Period: 2:05-3:00

SMALL GROUP INTERVIEWS, INSTRUCTIONS

FOR STUDENT QUESTIONNAIRE

Small Group Interviews
Suggested Administrative Procedures
San Carlos High School

1. Wait about five minutes for newcomers. Collect passes, check names off your list, write your name on pass without time entered.

2. Pass out questionnaire and pencils. Have them write name and date.

3. Explain nature of project and procedures:

   a. We are trying to find better ways to help high school students to make career choices, etc.
   b. This project is associated with the activity they did in U.S. History (Kuder) and English (red booklet).
   c. Now we need specific information from them as to what they have actually done in the area of vocations and educational planning since April 27, Monday.
   d. This is the most important part of the project and their responses will be most valuable to us in order to develop better ways of learning about careers for students.
   e. There are not any right or wrong answers. Most of the answers will probably be "No", only some "Yes" (be alert for awareness that if there is a "Yes" answer they will have to write an additional form for it. If that happens, be frank but stress the value of this project to them and us.
   f. Ask if there are any questions. Start in and when finished bring material to you.

4. For each student when finished:

   a. Go thru Section A and give him a form for each "Yes" in that section.
   b. Stress the importance of being as specific as possible PARTICULARLY about name and address or some way we can check the info out.
   c. Tell them to come back when they finish this section.

Small Group Interviews, Instructions
for Student Questionnaire (Cont'd.)

5. Then when they complete this, individually go over each Form A (or the one section you gave them) to check for questionnable, non-specific answers.

6. Pass out the remaining forms for the appropriate "yes" answers. Have them come up when they complete it. Check the forms, finish their room pass, and send them back to class.

   Please remember:

   1. Collect pencils.
   2. Thank them for helping.

7. Collect questionnaires and forms together for each person and stack together.

8. Notes:

   a. If a student doesn't finish (comes in late perhaps) keep him to next period or sign his pass for the next day (afternoon, E-5, if possible). 99% of them will finish before the period is finished.
   b. Be sure to keep an accurate account on your list of those who show or who are absent.
   c. Have them write separate forms for each question even though they feel it is similar or the same person. However, they may, instead of repeating information, refer to a previous question on a previous form.
   d. Any questions, get a hold of Sheppard (1st and 2nd pd in B-4; 3rd in B-1; 6, 7 in E-5) by intercom.

SHEPPARD PROJECT
Schedule
April 26, 1965

Sample Schedule for Proctors

Period	Time	VAN DALSEM	NIXON	PETERS	POPLACK	Time	Period
1	8:15-9:10	G-4 Mrs. Farady (14R)	G-11 Miss Beach (28)	P-1 Mr. Faulkner (28)	--	8:15-9:10	1
2	9:15-10:10	G-4 Mrs. Farady (20R)	E-4 Mrs. Hughes (32)	P-1 Mr. Faulkner (32)	--	9:15-10:10	2
3	10:15-11:13	G-7 Miss Beach (27)	E-4 Mrs. Hughes (27)	P-1 Mr. Faulkner (32)	G-11 Mrs. Comeskey (27)	10:15-11:13	3
4	11:15-12:00		L U N	C H		11:15-12:00	4
5	12:05-1:00	G-7 Mr. Nagle (28)	E-4 Mrs. Hughes (28)	G-3 Miss Hjelmaa (25)	G-2 Miss O'Hagan (29)	12:05-1:00	5
6	1:05-2:00	G-4 Miss Hjelmaa (24)	G-5 Mr. Faulkner (28)	P-1 Mrs. Comeskey (29)	G-2 Miss O'Hagan (25)	1:05-2:00	6
7	2:05-3:00	--	--	P-1 Mrs. Comeskey (30)	G-7 Mr. Nagle (27)	2:05-3:00	7

APPENDIX D

EXPERIMENTAL MATERIALS

(Booklets photographed and slightly reduced in size)*

D-1 Problem-Solving Treatment Booklet
Forms Inserted in Booklet Envelopes

D-2 Accounting Information Treatment Booklet
Questionnaire Inserted in Booklet

D-3 General Information Control Treatment Booklet
Questionnaire Inserted in Booklet

---

*The following booklets are photgraphed from the original experimental materials. They differ from the original in that they are slightly reduced in size; are on lighter weight paper; are printed on one side only; and, the _Accountant's Kit_ does not show actual envelopes but shows the inserted material at the end of the booklet.

ACCOUNTANTS KIT

Prepared by:
John D. Krumboltz, Ph.D.
Lawrence E. Sheppard

School of Education
Stanford University
Stanford, California

Would you like to be an **ACCOUNTANT?**

Before you can decide you probably would like to know more about the job.

What does an **ACCOUNTANT** do?

Here is one kind of problem which **ACCOUNTANTS** must solve.

See if you can solve it.

Read the following material carefully and follow the instructions.

Why are ACCOUNTANTS necessary?

Millions of dollars are stolen each year by dishonest employees. They may write false statements on business records, write incorrect checks, or forge signatures.

One job of an **ACCOUNTANT** is to check these business records to correct errors and prevent possible theft.

Your Problem . . . . . .

Imagine now that you are an **ACCOUNTANT.**

You receive a telephone call from Mr. E. Z. Mark, owner of the Mark Sport Shop.

He wants to hire you to go over his records to make sure everything is in order.

He is worried that his business does not seem to be making as much money as it should.

You inform him that your fee for inspecting his books is $25.00 per hour and he agrees to pay you on that basis.

Before you can earn your pay, here are a few facts you must know. . . .

1. **WHAT IS A CHECK?**

- Some people pay for things with cash. Another way is to pay by check.
- If you deposit your money in a bank you may arrange to ask the bank to pay money out of your account.
- A check is simply your request to the bank to pay a certain amount of money to whomever you say.

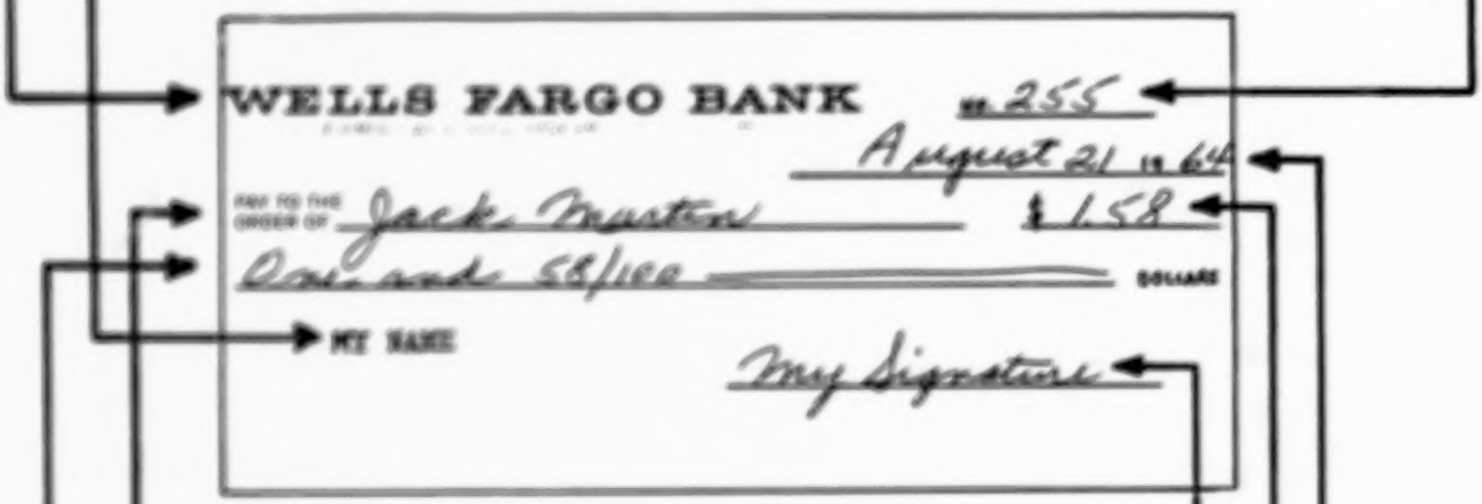
2. **HOW IS A CHECK FILLED OUT?**

- Suppose you wanted to pay $1.58 to your friend, Jack Martin. Your bank would supply you with the blank check forms.

Notice that the name and address of your bank appear here.

Your name may be printed by the bank here.

Your checks are numbered here (this is the 255th check in the series given you by the bank).



WELLS FARGO BANK No. 255

August 21 19 64

PAY TO THE ORDER OF Jack Martin $1.58

One and 58/100 DOLLARS

MY NAME

My Signature

You would fill out the rest, like this:

You write the name of the person who would receive the money here.

You write the amount in dollars and cents here.

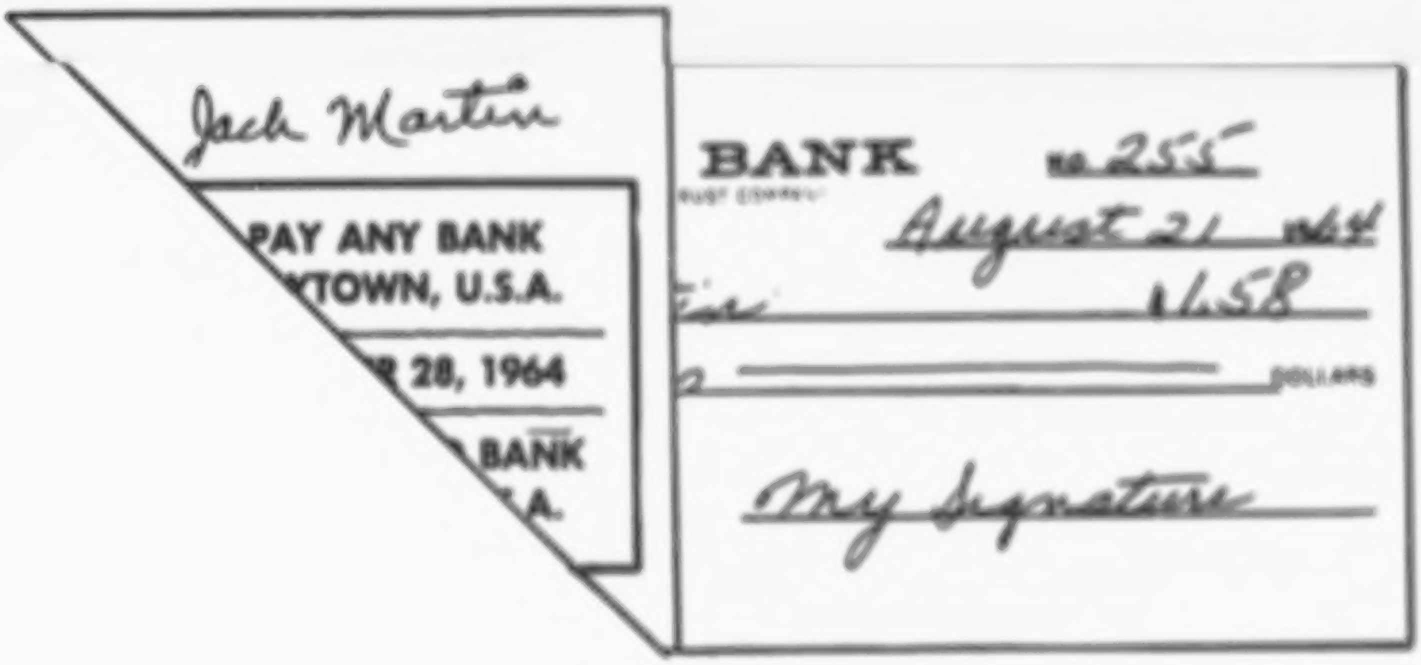
You spell out the amount of money here to make certain it is clear.

You write the date here.

You sign your own name here.

3. WHAT HAPPENS TO A CHECK AFTER IT IS WRITTEN?

- Jack takes the check to the bank and endorses it. This means he writes his name on the back of the check so the bank will have written proof that Jack has received the $1.58 from the bank. The bank will accept Jack's signature only since the check was made out to Jack.
- Only the payee (person to whom the check is written) is to endorse the check. Some companies use a special stamp instead of a signature. No one other than the person or company you wish should endorse the check and receive the money.
- The bank takes the check that Jack has endorsed and gives him the $1.58.
- The bank subtracts $1.58 from money you gave to the bank.
- The bank stamps the check as paid and the date it was paid.
- The bank returns the check (which is called a "cancelled" check now that the bank has put its stamp on it) to you along with a statement as to how much money you have left in your bank account.



NOW TO EARN YOUR $25.00 PER HOUR

- You go to see *Mr. Mark*. He introduces you to his bookkeeper, *Mr.* Robert Baron, a clean-cut young man who he says is very honest and dependable.
- *Mr. Mark* gives you the following information:
  1. The owner, *Mr. Mark*, is the **only** person allowed to sign a check.
  2. He has only one employee, *Mr.* Baron, who does all the office work and helps with the sales since *Mr. Mark* is away from the store much of the time.
  3. Samples of his and his bookkeeper's signatures are as follows:

E. Z. Mark — Robert Baron

E. Z. Mark — Robert Baron

  4. Open **PACKET A**, below. It should include (1) *Mr.* Baron's Record of Checks Written for October, (2) The cancelled checks for October, which have been cashed, and returned to *Mr. Mark* by his bank, and (3) your Report Form.
  5. Now, look at the instructions for your job on the next page.

PACKET A

THIS PACKET CONTAINS:

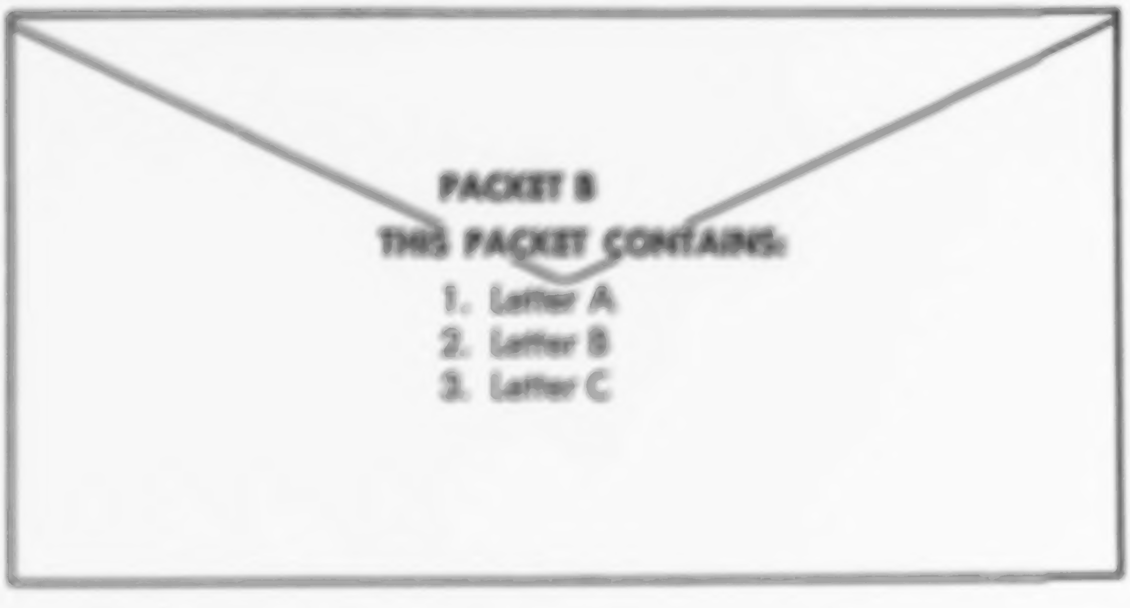
1. Cancelled October checks received from bank
2. Record of Checks Written
3. Report Form

Checks used in this kit are courtesy of:
Wells Fargo Bank, San Francisco, California

YOUR JOB

- Take the cancelled checks, the Record of Checks Written, and your Report Form out of **PACKET A.**
- Inspect each check carefully on both sides and compare it with the Record of Checks Written for October 1964, which was kept by Mr. Baron.
- List on your Report Form, Part I, anything you feel is incorrect in these records. Take as much time as you need.

- You have been hired by *Mr. Mark* and now must report to him exactly what you discovered to be incorrect.
- Take the three letters out of **PACKET B,** below. Which one letter will you send to *Mr. Mark?*
- Circle Letter A or B or C in Part II of your Report Form.



PACKET B
THIS PACKET CONTAINS:

1. Letter A
2. Letter B
3. Letter C

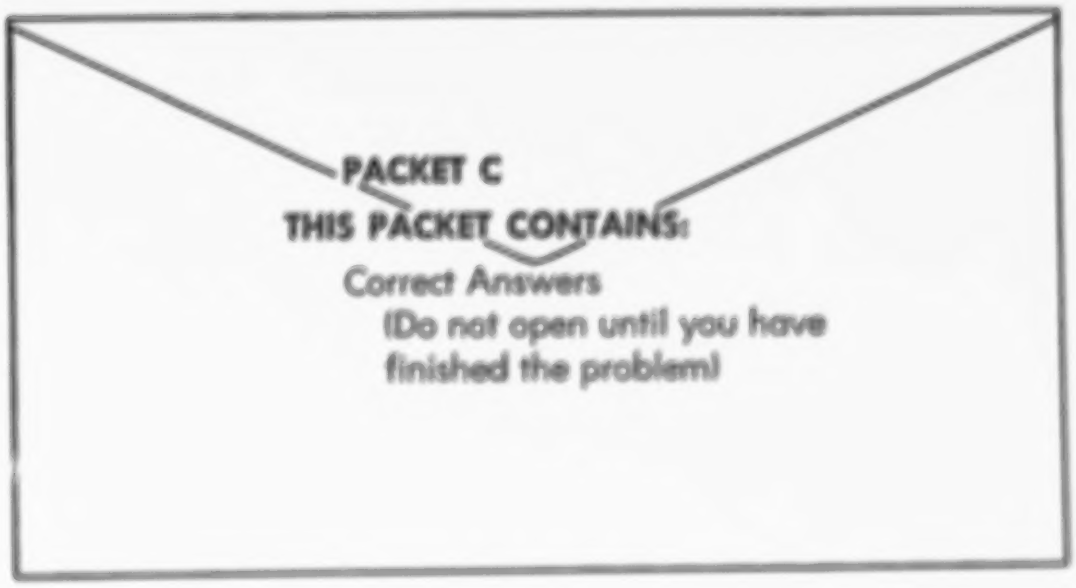
- You should have circled Letter C in Part II of your Report Form.

- You should have listed at least **four** errors in Part I of your Report Form. (There are more than four, but if you found four, you have the right idea.)

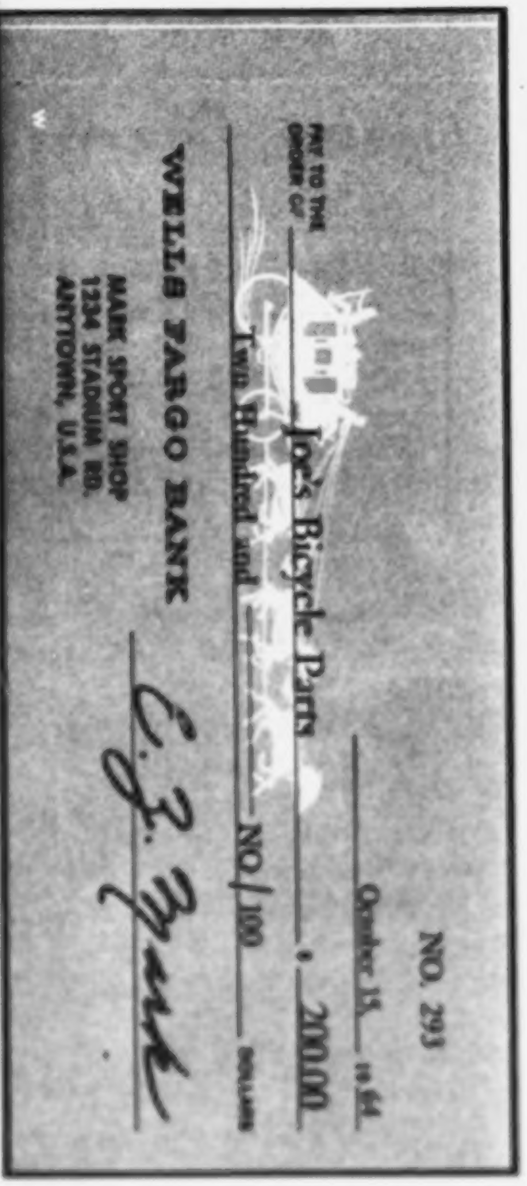
- If you did not find four errors, go over your work once again to see what you may have missed.

- Now perhaps you would like to see if you correctly found four of the possible errors.
- Open **PACKET C,** below, and remove the Correct Answers, and compare your answers with them.
- Did you successfully find four errors that were among those listed on the Correct Answers?
- Circle either **YES** or **NO** in Part III of your Report Form.
- If you said **YES,** you have successfully solved one of the types of problems faced by **ACCOUNTANTS.**

Of course you realize that **ACCOUNTANTS** help solve many other types of problems also. Perhaps you would be interested in discovering more about **ACCOUNTING** as a **possible career** for you.



PACKET C
THIS PACKET CONTAINS:
Correct Answers
(Do not open until you have finished the problem)



NO. 293

October 15, 19 64

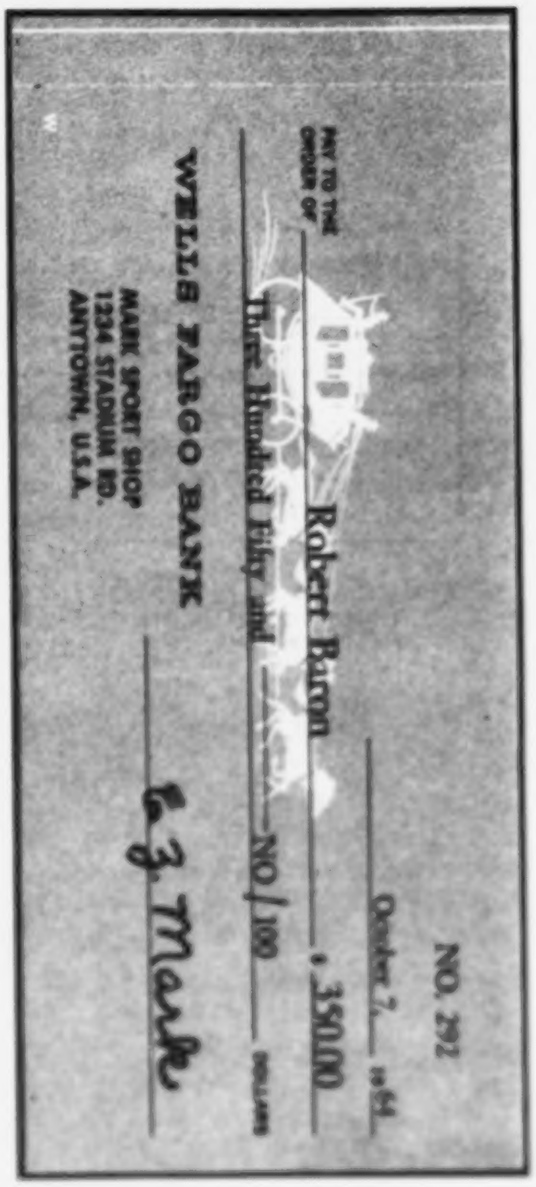
PAY TO THE ORDER OF Joe's Bicycle Parts $ 200.00

Two Hundred and NO/100 DOLLARS

WELLS FARGO BANK

MARK SPORT SHOP
1234 STADIUM RD.
ANYTOWN, U.S.A.

E.J. Mark



NO. 292

October 7, 19 64

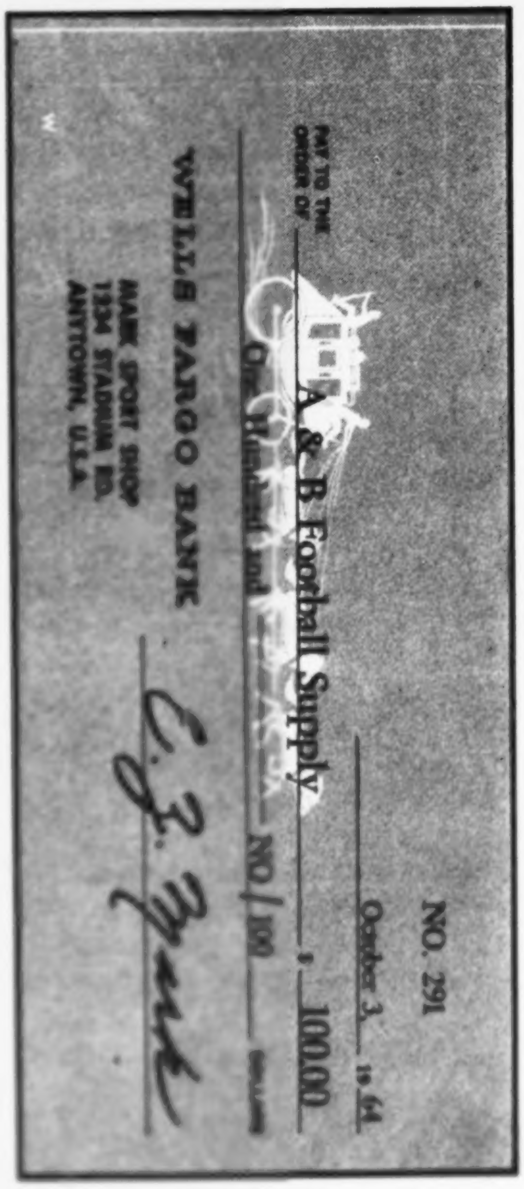
PAY TO THE ORDER OF Robert Baron $ 350.00

Three Hundred Fifty and NO/100 DOLLARS

WELLS FARGO BANK

MARK SPORT SHOP
1234 STADIUM RD.
ANYTOWN, U.S.A.

E.J. Mark



NO. 291

October 3, 19 64

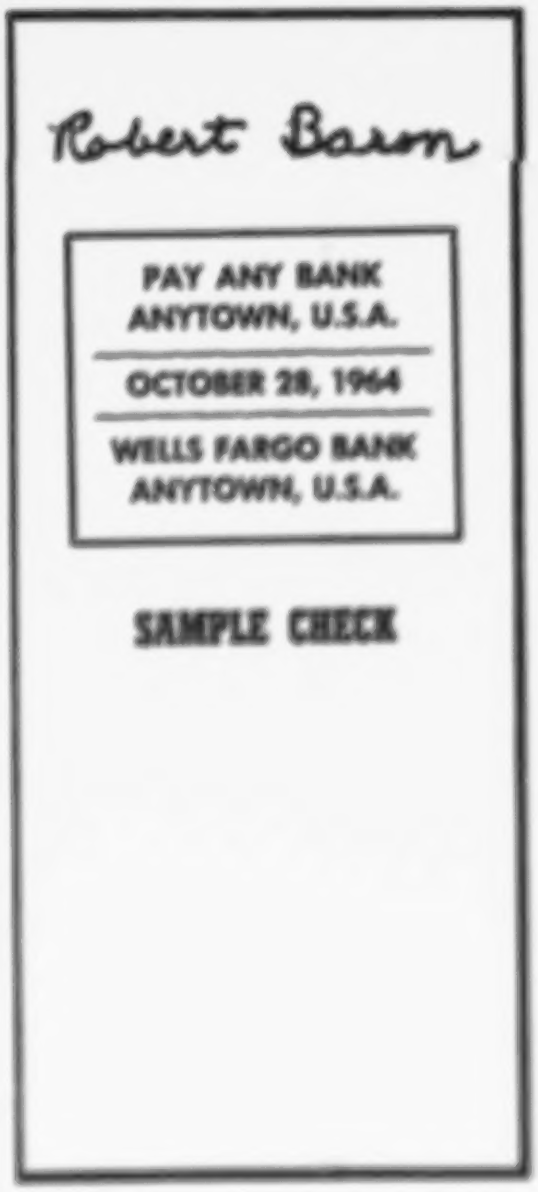
PAY TO THE ORDER OF A & B Football Supply $ 100.00

One Hundred and NO/100 DOLLARS

WELLS FARGO BANK

MARK SPORT SHOP
1234 STADIUM RD.
ANYTOWN, U.S.A.

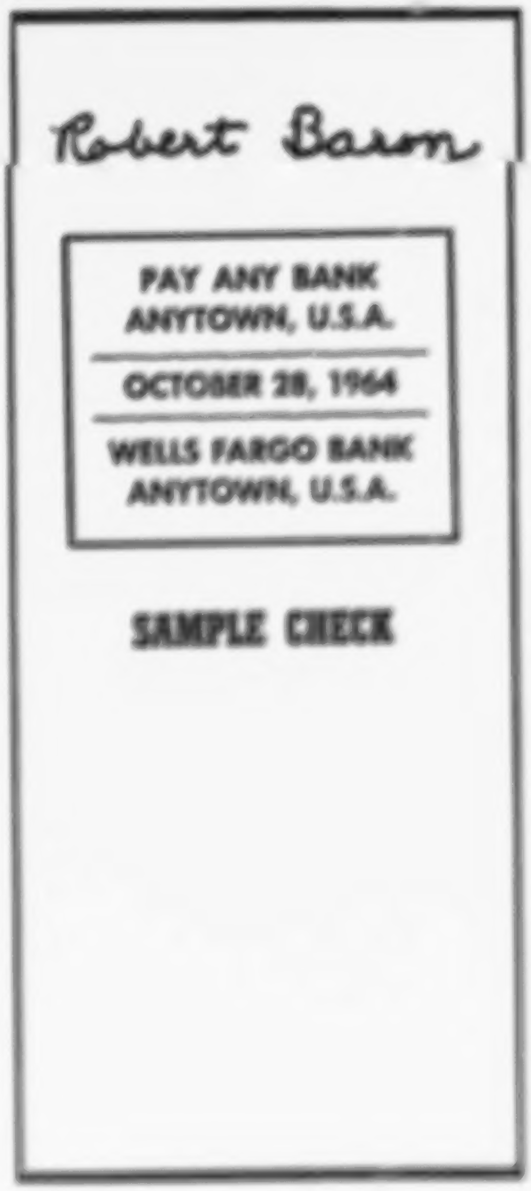
E.J. Mark



Robert Baron

PAY ANY BANK
ANYTOWN, U.S.A.
OCTOBER 28, 1964
WELLS FARGO BANK
ANYTOWN, U.S.A.

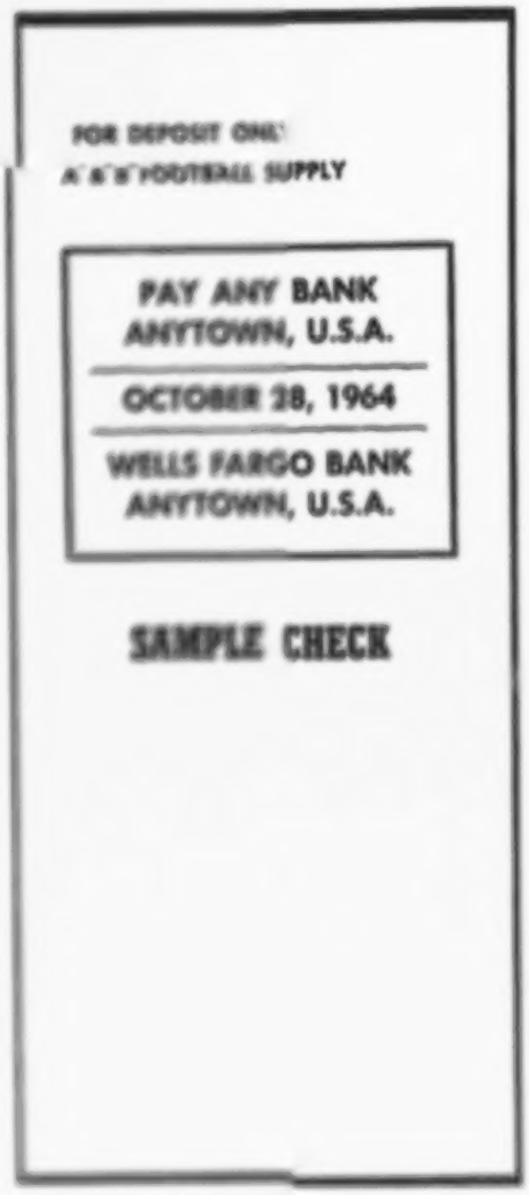
SAMPLE CHECK



Robert Baron

PAY ANY BANK
ANYTOWN, U.S.A.
OCTOBER 28, 1964
WELLS FARGO BANK
ANYTOWN, U.S.A.

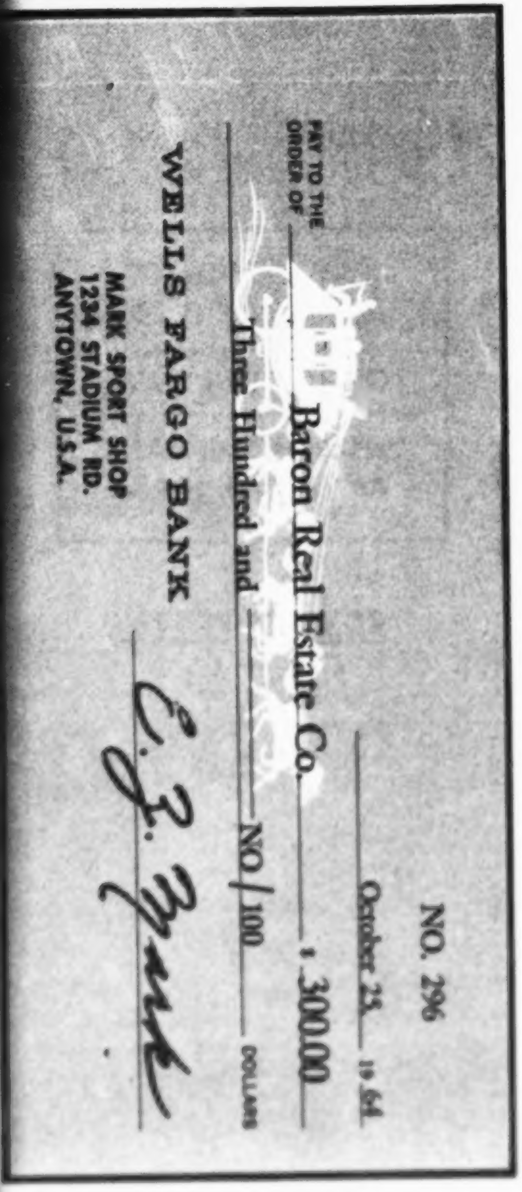
SAMPLE CHECK



FOR DEPOSIT ONLY
A & B FOOTBALL SUPPLY

PAY ANY BANK
ANYTOWN, U.S.A.
OCTOBER 28, 1964
WELLS FARGO BANK
ANYTOWN, U.S.A.

SAMPLE CHECK


NO. 296

October 23 19 64

PAY TO THE ORDER OF Baron Real Estate Co. $ 300.00

Three Hundred and NO/100 DOLLARS

WELLS FARGO BANK

MARK SPORT SHOP
1234 STADIUM RD.
ANYTOWN, U.S.A.

E.J. Mark

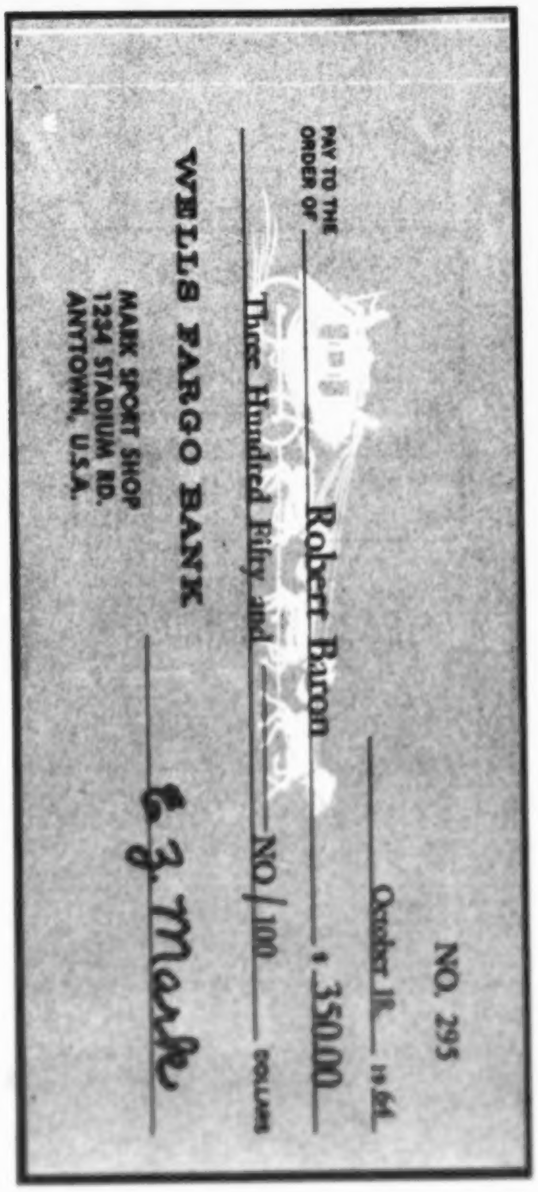
Robert Baron

PAY ANY BANK
ANYTOWN, U.S.A.

OCTOBER 28, 1964

WELLS FARGO BANK
ANYTOWN, U.S.A.

SAMPLE CHECK


NO. 295

October 16 19 64

PAY TO THE ORDER OF Robert Baron $ 350.00

Three Hundred Fifty and NO/100 DOLLARS

WELLS FARGO BANK

MARK SPORT SHOP
1234 STADIUM RD.
ANYTOWN, U.S.A.

E.J. Mark

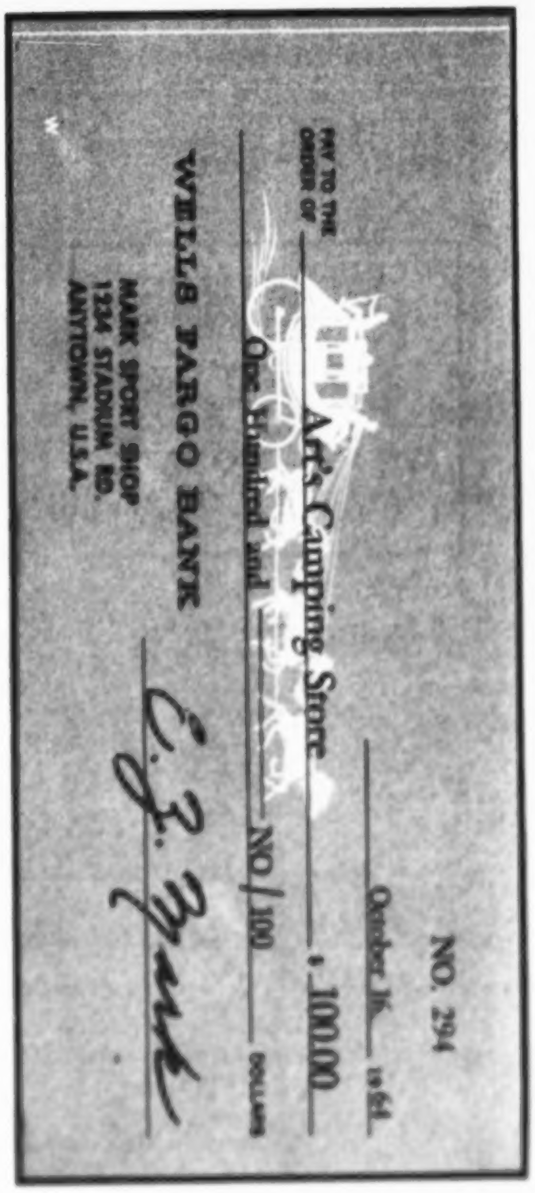
Robert Baron

PAY ANY BANK
ANYTOWN, U.S.A.

OCTOBER 28, 1964

WELLS FARGO BANK
ANYTOWN, U.S.A.

SAMPLE CHECK


NO. 294

October 16 19 64

PAY TO THE ORDER OF Art's Camping Store $ 100.00

One Hundred and NO/100 DOLLARS

WELLS FARGO BANK

MARK SPORT SHOP
1234 STADIUM RD.
ANYTOWN, U.S.A.

E.J. Mark

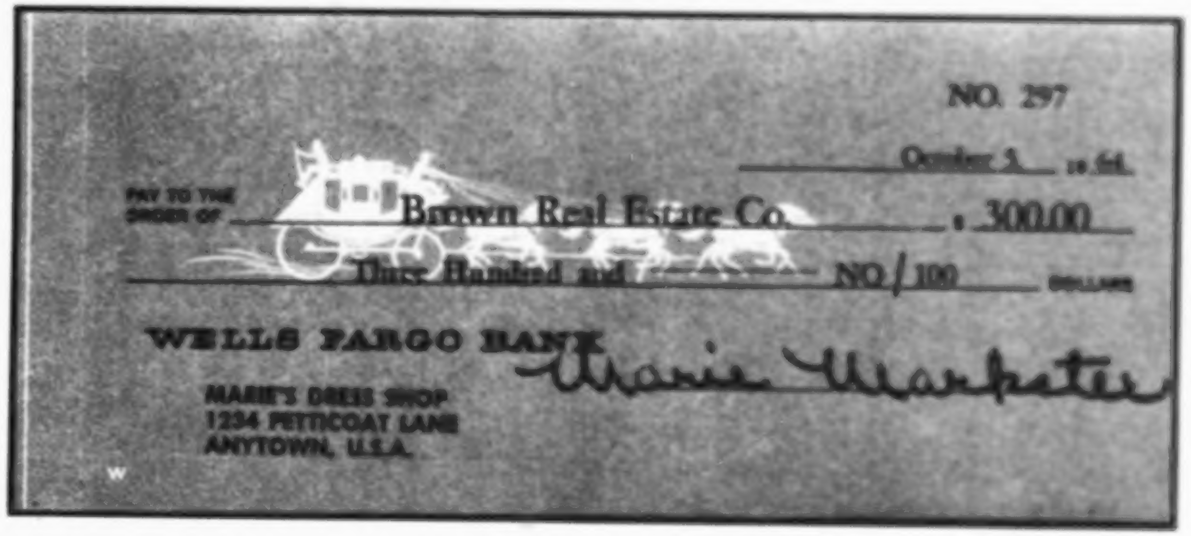
FOR DEPOSIT ONLY
ART'S CAMPING STORE

PAY ANY BANK
ANYTOWN, U.S.A.

OCTOBER 28, 1964

WELLS FARGO BANK
ANYTOWN, U.S.A.

SAMPLE CHECK



NO. 297

October 5 19 64

PAY TO THE ORDER OF Brown Real Estate Co. $ 300.00

Three Hundred and NO/100 DOLLARS

WELLS FARGO BANK

Marie Marketer

MARIE'S DRESS SHOP
1234 PETTICOAT LANE
ANYTOWN, U.S.A.

W

FOR DEPOSIT ONLY
BROWN REAL ESTATE CO.

PAY ANY BANK
ANYTOWN, U.S.A.

OCTOBER 28, 1964

WELLS FARGO BANK
ANYTOWN, U.S.A.

SAMPLE CHECK

RECORD OF CHECKS WRITTEN

OCTOBER 1964

MARK SPORT SHOP

Date of Check	Person to whom check is written	Check Number	Check Amount	Reason the check was written
Oct. 3	A & B Football Supply	291	$ 50.00	To pay for 8 footballs
Oct. 7	Robert Baron	292	350.00	Wages for last month
Oct. 15	Joe's Bicycle Parts	293	200.00	To pay for bicycle parts
Oct. 16	Art's Camping Store	294	100.00	To pay for 3 pen flashlights
Oct. 18	--	295	---	Check destroyed, made wrong
Oct. 25	Brown Real Estate Co.	296	300.00	To pay for month's rent
	Total October 1964 Checks		$1,405.00	

REPORT FORM

Print your name here ______________________________
First Last

Part I LIST OF ERRORS FOUND.

Part II Which letter will you send to Mr. Mark?

A B C (circle one)

Part III Did you find the number of errors for a successful job?

YES NO (circle one)

NOTE: When you have completed the job please replace all the material except this Report Form in the proper packets.

LETTER A

Mr. E. Z. Mark, Owner
Mark Sport Shop

Dear Mr. Mark:

I have examined the Record of Checks Written and the cancelled checks for the month of October 1964, in accordance with generally accepted accounting standards.

In my opinion the above records present fairly and accurately the bank expenses of the Mark Sport Shop for the month of October 1964, and represent good business methods for the month under review.

Very truly yours,

Certified Public Accountant

LETTER B

Mr. E. Z. Mark, Owner
Mark Sport Shop

Dear Mr. Mark:

I have examined the Record of Checks Written and the cancelled checks for the month of October 1964, in accordance with generally accepted accounting standards.

In my opinion the above records present fairly the bank expenses of the Mark Sport Shop for the month of October 1964, with some minor exceptions which I shall list separately on my Report Form.

Very truly yours,

Certified Public Accountant

LETTER C

Mr. E. Z. Mark, Owner
Mark Sport Shop

Dear Mr. Mark:

I have examined the Record of Checks Written and the cancelled checks for the month of October 1964, in accordance with generally accepted accounting standards.

In my opinion the above records do not present fairly or accurately the bank expenses of the Mark Sport Shop for the month of October 1964. A list of minor and major errors is enclosed on my Report Form.

Very truly yours,

Certified Public Accountant

CORRECT ANSWERS

1. Check 291: Amount of check ($100.00) different from Record of Checks Written ($50.00).

2. Check 292: Signature forged (see sample signatures).

3. Check 293: Wrong person endorsed check (see back of check).

4. Check 294: Nothing wrong with check but $100.00 appears to be too much to pay for three small flashlights.

5. Check 295: Despite indication that this check was destroyed, it was actually cashed by Mr. Baron who appears to have forged Mr. Mark's signature.

6. Check 296: Check made out to a different company than shown on the Record of Checks Written. Possibly so Mr. Baron could endorse and cash the check himself.

7. Check 297: This check was incorrectly charged to Mr. Mark's account by the bank. The bank should be notified of this error and the check charged against the account of Marie's Dress Shop. (Note upper left hand corner of check.)

8. Record of Checks Written: The total for October checks showing $1,405.00 is incorrect. The correct total is $1,000.00.

ACCOUNTANT'S KIT

Prepared by:
John D. Krumboltz, Ph. D.
Lawrence E. Sheppard

School of Education
Stanford University
Stanford, California

- Your choice of a career is one of the most important decisions you will make in your life.
- For each of the possible careers you consider, you will want to know what the work is like; what it takes to be successful; how much you can earn if you are successful; what aptitudes, education, and training you will need; and how fast you can hope to get ahead.
- The purpose of this booklet is to answer these questions for the accounting profession—more specifically, to tell you what you can expect if you should decide to become an accountant.

ACCOUNTING

MAY BE THE RIGHT FIELD FOR YOU!

ACCOUNTING offers almost unlimited opportunities for recognition, financial reward, and public service. The **ACCOUNTANT** enjoys prestige in his community. His work is interesting, varied, and constantly challenging.

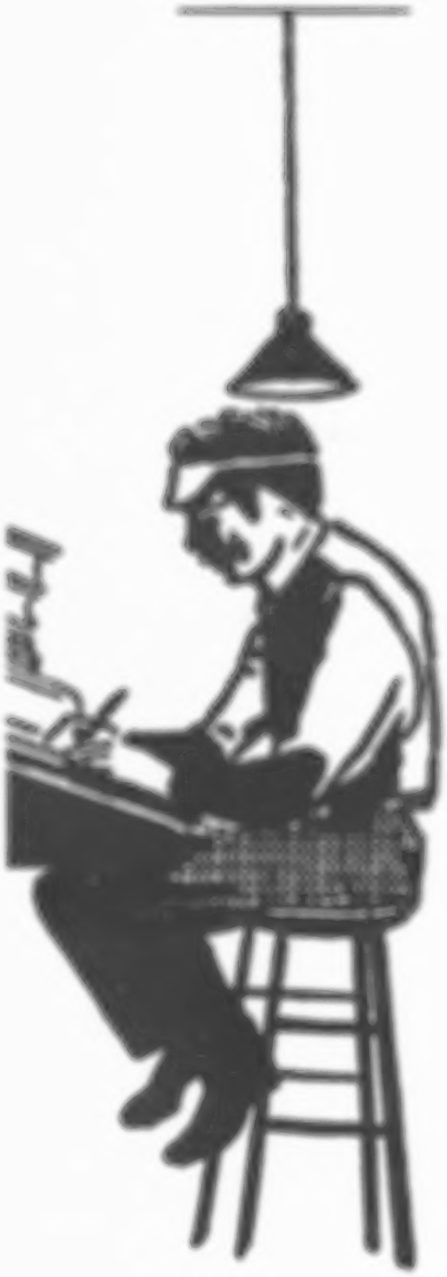
The following pages attempt to describe **ACCOUNTING** so that you can decide whether it would be interesting to you.

CHAL

VARIETY

LENGE

IS THIS AN ACCOUNTANT?



- a fellow on a high stool?
- with a green eyeshade?
- with black cuff protectors?
- with steel rimmed spectacles?
- "fiddling" with numbers?

- **WELL . . .**
  maybe
  . . . BUT

- . . . THAT was
  over a hundred years ago,
  fellah!

THINGS ARE DIFFERENT NOW

- **No high stool**
- **No green eyeshade**
- **No black cuff protectors**
- **No steel rimmed spectacles**
- **No number "fiddling"**

TODAY THE ACCOUNTANT IS THE EYES AND EARS OF MANAGEMENT.

ADVISING management on business methods

ANALYZING business expenses so owners can increase profits

EXAMINING business information for accuracy and use

SOLVING tax problems for individuals and businessmen

ALL RIGHT, LET'S GET . . .

ACCOUNTING FOR LOSSES

— A SHORT STORY —

Mr. Edwin Z. Mark, owner of the E. Z. Mark Sport Store was worried. Business seemed good, and yet . . . Ed Mark thought to himself, "Business should be good; this is the busy season, and all sorts of sales are being made. Of course, I can't be in the store all the time and maybe I should." "But," he went on, "I have a good man in Bob Baron, who doubles as my salesman and bookkeeper. I don't really have to work as much as I used to because he's such a capable person." "But why," he pondered, "don't I seem to ever have enough cash in the bank?" Bob had told him it was only a temporary situation. Business was so good that they had to buy much more merchandise than they had on hand. This meant they had to pay for the goods in advance and so naturally their cash balance was temporarily low.

A customer came in. Mr. Mark looked up and smiled. It was his old friend Bill Stoddard. He had always liked Bill because it was easy to talk with him. "Hi, Bill," he said. "You're just the man I want to see. How about going out and having some coffee before you buy what you want?"

"Great," smiled Bill, "but you pay. I've got to save my money to buy some golf balls from you."

Bill could tell his friend was worried about something, so as soon as the coffee was served he encouraged Ed to talk. Ed started right in.

"Bill, I don't understand it. Business seems to be good; lots of customers are buying, but I never seem to have enough money in the bank." He repeated Bob's explanation. "But," and he looked at his friend, "I'm still not sure about it. It doesn't make sense to me. What do you think?"

Bill sipped his coffee thoughtfully. "Ed," he finally said, "I don't know if you have reason to worry or not, really. But I'd suggest you get hold of someone who can help you. Accountants do this sort of thing and, frankly, I'm surprised you don't have one to help you analyze your business. It might help, you know. At least you'd know more than you know now."

"Well, I'd thought of that, Bill, but then I thought that Bob would be offended because I'd have someone checking on him and. . ."

"Nonsense," interrupted Bill, "most businesses nowadays have accountants on a regular weekly or monthly basis. The bookkeeper soon learns that he's there to help him do work more effectively and is not there as a spy." He stopped. "Ed, do you suspect Bob of anything?"

"Oh, no, no," said Ed. "It's just that . . . Well, maybe you're right. I'll have an accountant come in."

About two months later Bill dropped in the store again. "Ed," he said when they were alone, "did that problem come out all right?"

"Well, Bill," Ed sighed, "you certainly were right. I found out a lot about my business I didn't know, and unfortunately, a lot about Bob I wish weren't true."

Bill looked at him closely. "Bob was stealing from you?" he asked.

Ed nodded. "That was one of the problems," he said. "You know, I wasn't around much, and I guess it was tempting to a young fellow. The accountant showed me how Bob had signed my name to checks and how, because I let him take care of my bank balance, this never came to my attention. Why he even opened a bank account for a fake business in his own name. Then he'd write checks from my bank to pay for merchandise that we'd supposedly bought from his fake business. Of course we hadn't bought any but he collected the money anyway. And nobody was the wiser—until my accountant did some routine checking."

Ed shook his head. "It makes me feel sad to think about Bob's getting in this trouble. Somehow I think it's partly my fault because I was so careless."

"That was the main problem then, eh?" asked Bill.

"No," replied Ed, "not really. Most of the reasons for my not having cash wasn't Bob's fault at all. His part in it didn't involve that much money. The big thing was that I was selling many of my items for less than they cost me, and I didn't even know it! So actually I was losing money every time I made a sale!"

"How could you do such a thing as that," Bill responded, "without knowing it?"

"Well, you see there're lots of costs you don't realize in a business and they add up. For example: rent, electricity, telephone, advertising, and so on cost money and somehow you have to mark your prices high enough on each item to cover these costs. I hadn't bothered to estimate the costs carefully and as a result I was really in danger of losing the business.

"It sounds crazy," and he laughed, "but as the accountant said, if business had continued being so good, in another few months I'd have been broke!"

. . DOWN TO BUSINESS . . .

SOME MORE of the interesting problems with which accountants deal every day, everywhere.

A young baseball player recently signed a major league contract for a bonus of $100,000. Accountants solved the problem of how the bonus should be accounted for in the best interests of both the player and the ball club.

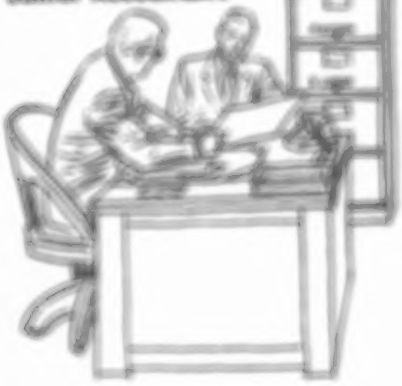
The building of an atomic power plant was started in one of the nation's largest cities after reports prepared by the accounting department indicated good prospects for its profitable operations.

Recently a major automobile company decided to restyle completely one year earlier than planned. Its decision was based to a great extent on cost and profit estimates made by its accountants.

A well-known insurance company installed new electronic computers to control collections of premiums from its millions of policyholders. Accountants plan and supervise the operation of this equipment.

YOUR CAREER IN

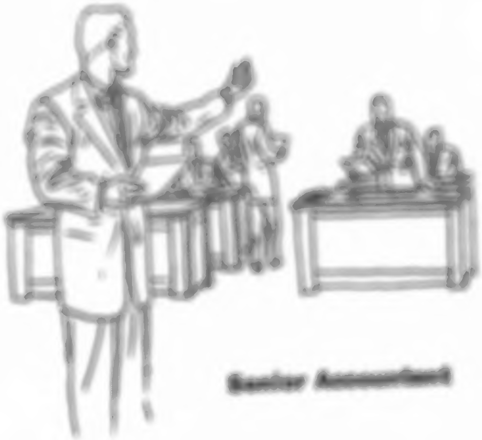
A. START


Junior Accountant

Most accountants begin their careers as members of public accounting firms—companies which do the accounting work for many different businesses. The new accountant is likely to be given fairly routine work at first as he must gain experience.

The new junior works for a time under close supervision, gaining an ability to form his own judgments through experience with a variety of different businesses. Before long he will begin to take personal responsibility for more and more of the operations.

Accountants are usually junior accountants for two or three years before they are advanced to senior accountants.


Senior Accountant

B. ADVANCE

The senior accountant is usually in charge of an entire assignment. He may work alone or with the help of one or more assistants. The senior conducts the work, trains the juniors, takes care of any details which require special judgment and technical knowledge and handles the routine contacts with the business clients.

The great advantage of accounting as a career is that it does not limit your vocational opportunities. You now have several choices for your career. You can:

ACCOUNTING . . .

C. NOW—CHOOSE

GO INTO PARTNERSHIP WITH OTHERS. One of the difficulties of starting your own practice too early is that you need broad experience to take care of the needs of the wide range of small clients you would probably get. It is usually better for a young accountant to associate himself in partnership with one or more other accountants . . . or

Government Accounting

GO INTO GOVERNMENT ACCOUNTING. There is hardly any branch of government—local, state or federal—that does not offer opportunities for the accountant. Many field agents of the Internal Revenue Service are accountants, as are a number of FBI agents; and most government departments have their own accounting staffs . . . or

TAKE A PRIVATE ACCOUNTING POSITION. Men in public accounting firms are quite likely to have offers from clients or other business companies who are impressed by their ability. Many accountants are employed as executives, treasurers, or heads of tax departments in medium- and large-sized corporations . . . or

Specialization

Your Own
Business

SPECIALIZE IN SOME PHASE OF ACCOUNTING. An accountant, by graduate study or specific experience, may specialize in some phase of accounting such as taxation or in some business activity such as banking, insurance, or transportation . . . or

START YOUR OWN PRACTICE. Any progressive community having at least fifty businesses can support a small accounting office. Larger places offer more opportunity, and of course, more competition . . . or

Stay With
Your Firm

TEACH. There is a real need for accounting teachers. The license to practice accounting is accepted by most colleges and universities as the equivalent of a Ph.D. in this field . . . or

STAY WITH YOUR FIRM. If you have what it takes, you may look forward to an eventual partnership in the public accounting firm where you started.

IMPORTANT

WHAT CAN YOU EARN?

In accounting the pay is good and the opportunities for getting ahead are excellent. If you are hired by an accounting firm you will start with a salary of $400 to $500 a month. Within five years, you can reasonably hope to earn in the neighborhood of $10,000 a year.

If you become a supervisor, manager, or partner in an accounting firm, your annual salary will range between $10,000 and $25,000. Some partners in large accounting firms earn between $50,000 and $100,000 a year. It is not unusual, if you become an accountant in a large business firm, to work yourself up to a salary of $75,000 a year. The treasurers, vice presidents, and often the presidents of many of America's most important corporations began as accountants.

ARE THE HOURS GOOD?

Generally, accountants working for private companies and government agencies work the standard 40-hour workweek.

Public accountants, on the other hand, are likely to be much busier in some seasons of the year than others. Usually from late November to March they will work long hours. They do most of their work in their clients' offices, and sometimes do a considerable amount of traveling in order to serve distant clients.

Most private and governmental accountants work in the same offices day after day under the same general conditions as their fellow office workers.

WOMEN ACCOUNTANTS?

Nearly 10% of the estimated 350,000 accountants in the United States are women, and well-qualified young women will find many opportunities in this field.

Despite the problems of pressure of work and fear on the part of some accounting firms that their clients may be prejudiced against women accountants, a number of women have become successful as senior accountants or individual practitioners, and some have achieved partnership status.

Women now have their own national professional society, the American Women's Society of Certified Public Accountants.

INFORMATION

IS THE WORK REWARDING?

Employment opportunities for accountants appear to be very good. At least 10,000 accountants will be needed each year just to replace accountants who die, retire, or transfer to other occupations. Assuming that business activity continues at its present rate, it is estimated that approximately 5,000 accountants will be needed each year to fill *new* positions.

Highly trained accountants will be in even greater demand as consultants to business because of the increasing need for trained people to guide management in making short- and long-range plans for business operations; for specialized help in the interpretation of tax laws, and for assistance in planning new systems and procedures using electronic data-processing equipment.

WHERE CAN YOU WORK?

Accountants find jobs wherever businesses are established. Therefore, accountants work in all sections of the United States, in towns and cities of all sizes.

The largest number of accountants are hired by private industry; one-third by public accounting firms; and about one-tenth are employed by Federal and State governments. The majority of accountants work in large metropolitan centers although there is a noticeable rise in the number of accountants located in small communities as many national firms are opening branch offices in the suburbs.

HOW IS THE JOB OUTLOOK?

Advantages:

1. The work can be stimulating and satisfying.
2. The salaries for the qualified accountant are well above the average.
3. The work is not generally subject to seasonal layoffs.
4. It offers almost unlimited opportunities for professional recognition, financial reward, and public service.
5. The potential need for accountants is growing each year.

Disadvantages:

1. The accountant's schedule can be long and tiring.
2. Many accountants must travel a great deal.

would YOU be a SUCCESSFUL ACCOUNTANT?

the chances are good . . .

IF

YOU LIKE group activity.

YOU LIKE to meet new people and work with them.

YOU LIKE to seek out new experiences rather than restrict yourself to familiar situations.

YOU LIKE to work with ideas.

YOU LIKE to influence and direct others constructively.

YOU LIKE activities involving the use of authority and power.

INCIDENTALLY . . .

Did you notice we didn't say anything about an accountant's "working with figures?" That's because "figure work" is a small part of what the accountant *really* does. His true concern is not so much whether the figures "add up" but what their *real* meaning is.

CAN YOU LEARN NOW IF ACCOUNTING IS FOR YOU?

A. ABILITY?

. . .YES!

The test developed for this purpose is known as the Accounting Orientation Test. It is designed for high school juniors and seniors to provide you, your parents, teachers, and counselors with information concerning your potential for success in the study of accounting and in the general field of business. It requires 40 minutes to take and is prepared so that bookkeeping or accounting knowledge is not necessary for answering the questions. It may be of special interest for students who have done well in mathematics or science but may not have considered the opportunities in accounting or business in general.

B. INTEREST?

. . .YES!

Special sections for accountants have been developed for the Strong Vocational Interest Blank and the Kuder Preference Record tests. Both of these, giving information regarding interest in accounting, will take about 45 minutes to complete. They are available in most high schools.

C. ACHIEVEMENT?

. . .YES!

A number of achievement tests in accounting have been developed. They are designed, however, to measure knowledge after one year of college accounting study. Nevertheless, for those of you who have had some bookkeeping, it might be of interest to see how well you would do on this test.

WHAT ABOUT EDUCATION?

Highschool

YOUR HIGH SCHOOL PROGRAM

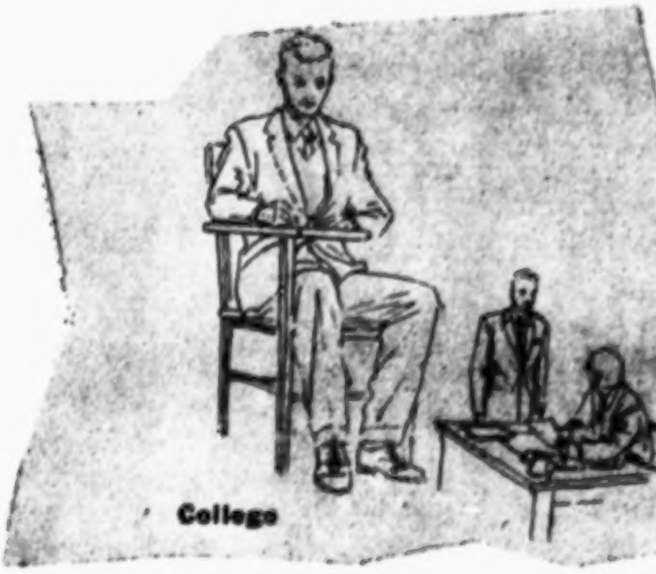
Frankly, accounting is such a broad field that most information can be put to good use sometime in your accounting career. That is because much of accounting is dealing with human beings rather than merely "things."

The beginnings of your knowledge should start right now—in high school. Courses usually offered such as English, history, science, and mathematics are valuable. In fact, a *general* college preparatory course is likely to be more useful to you than the specific business courses you might get in school.

EDUCATION AFTER HIGH SCHOOL

Although some accountants have received their training mostly by on-the-job experience, starting as a clerk and advancing to accounting jobs, most employers prefer to hire men and women who have had at least two years of college, and preferably who have graduated from college.

Accounting training can be gained at many types of institutions, including colleges, universities, junior colleges, correspondence schools, and business schools. Graduates of all these institutions are included in the ranks of successful accountants.



PRACTICAL EXPERIENCE FOR STUDENTS

Recently an increasing number of colleges and universities have worked out arrangements with accounting firms so that students can gain practical experience in accounting while going to college. Usually the student will take a semester out of his college work during which he will work as a junior accountant. This not only gives the student a better idea of his studies and his potential career but has many times led to immediate employment with the firm upon graduation. There are more than thirty schools now which have this type of program. It is called an "internship program."

AND NOW YOU CAN BEGIN

TO LEARN MORE ABOUT ACCOUNTING OR ANY OTHER FIELD OF WORK BY . . .

- Consulting your counselor or teachers for help on specific questions
- Taking interest and ability tests to find out more about yourself
- Talking with your parents or friends if they have jobs in which you are interested
- Talking to employers
- Looking up information in your library or counselor's office
- Getting assistance from vocational counselors from the State and Federal offices
- Getting advice on career possibilities with the local recruiters of the several branches of the Armed Forces

REPORT FORM

Accountant's Kit

Date:____________ Print Name: __________________________
First Last

Please do not start this form until after you read your Accountant's Kit.

See how many of the following questions you can answer correctly without referring to your Kit. Then go to your Kit, check your answers and complete those you may not have known.

1. In the short story "Accounting For Losses," Mr. Marks felt his main problem was one of the following:

a. His bookkeeper was stealing from him. ___

b. Mr. Marks hadn't made enough sales for a profit. ___

c. Mr. Marks didn't spend enough time on business. ___

d. Mr. Marks' prices were too low for his expenses. ___

(3 points)

2. A beginning accountant is called a ________ accountant. He will probably earn about $5,000 a year. After several years of experience he is advanced to ____________ accountant and within five years will earn about $10,000 a year.

(4 points)

3. The great advantage of accounting as a career is that it does not limit your career opportunities. After you become experienced you will have several choices for your career. For example, you may go into partnership, or:

a.__________________________, or b. __________________________

(2 points)

4. List two advantages and two disadvantages of being an accountant:

Advantages:	Disadvantages:
a.________________________	a. ________________________
b.________________________	b. ________________________

(4 points)

Report Form (Cont'd.)

Check either True or False for the following:

TRUE FALSE

5. About 10% of the accountants in the United States are women. ___ ___

6. The busy season for accountants is usually between June and August. ___ ___

7. The majority of accountants work in large city areas. ___ ___

8. A general college preparatory course is more useful for accounting training than specialized business courses. ___ ___

9. A large part of an accountant's job is adding up figures. ___ ___

10. Each year about 15,000 accountants are needed to fill new accounting positions or replace those who die. ___ ___

(2 points each)

Use your Kit to check your answers. Add your score and put the total in the box at right. Now insert correct answers to each question. (Possible score is 25 points. You should be able to score at least 12.)

CAREER KIT

Prepared by:
John D. Krumboltz, Ph. D.
Lawrence E. Sheppard

School of Education
Stanford University
Stanford, California

- Your choice of a career is one of the most important decisions you will make in your life.
- For each of the possible careers you consider, you will want to know what the work is like; what it takes to be successful; how much you can earn if you are successful; what aptitudes, education, and training you will need; and how fast you can hope to get ahead.
- The purpose of this booklet is to help you answer these questions — more specifically, to tell you how you might start exploring your career choices.

YOU'RE **ALWAYS** MAKING CHOICES . . .

What shall I wear today?

Should I use my spending money?

Should I have a car of my own?

Should I go steady?

Shall I get a part-time job?

What shall I do after high school?

What about marriage?

Should I wait to get drafted or volunteer in the armed services?

SOME CHOICES are simple; others need more thought.

SOME CHOICES should be made by you; others can be made for you.

SOME CHOICES you can make later; others you should make now.

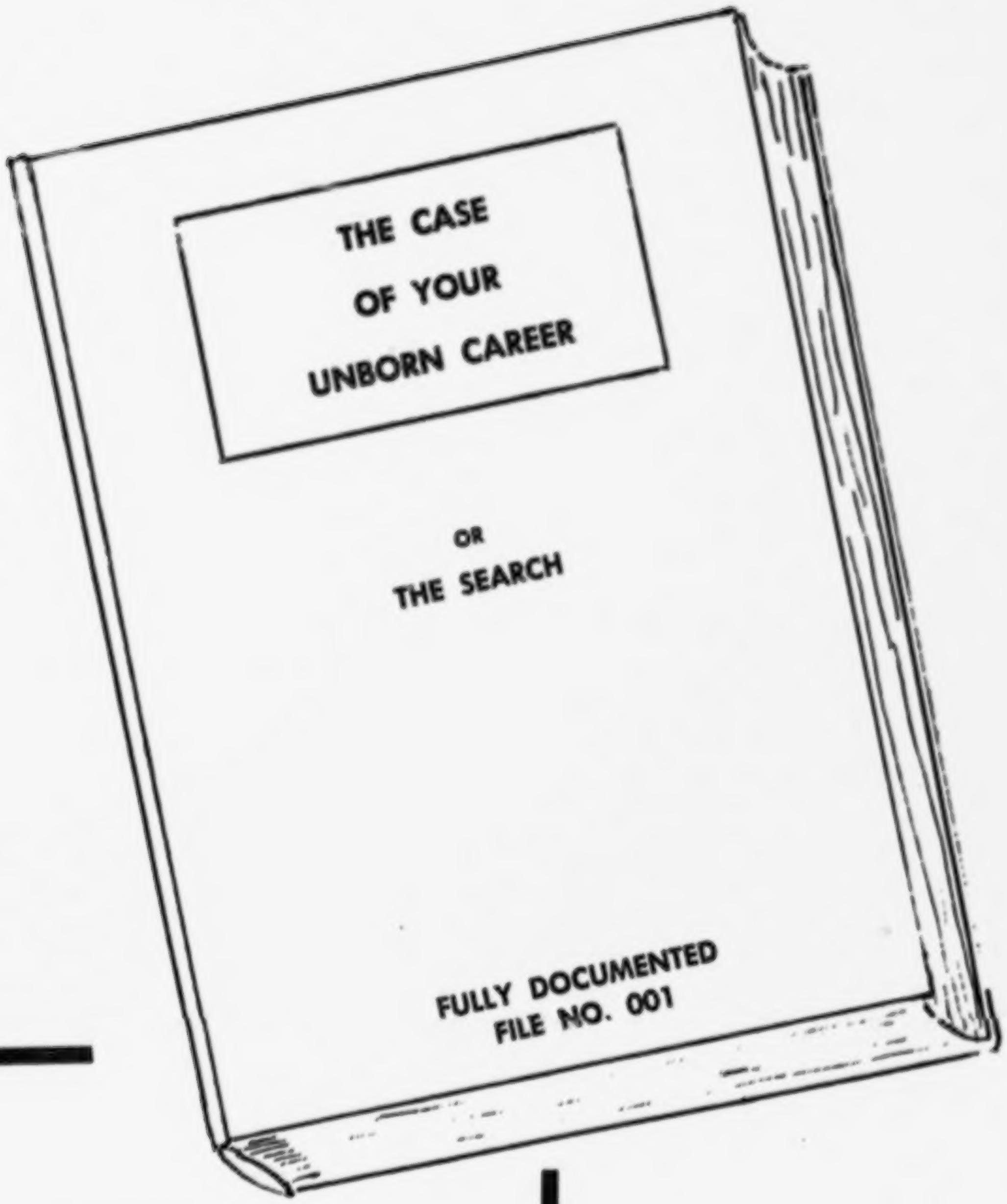
SOME CHOICES will have little effect on you; others will affect you greatly.

ONE SET OF CHOICES

YOU SHOULD THINK ABOUT NOW IS . . .

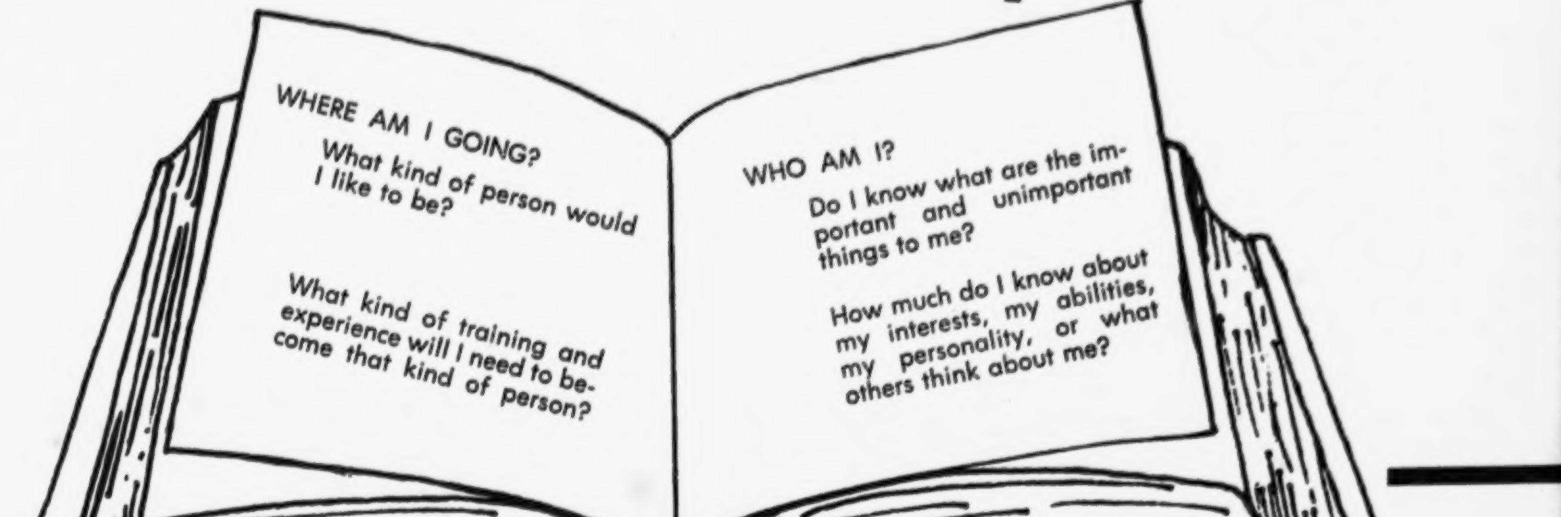
The Set of Choices That Will Lead to Your Making the Best Career Choice for You

- In class now, this probably seems like a far off problem. Of course, you don't have to make a final job choice right now — in fact, you probably shouldn't. But you **do** have to make important educational choices that will eventually do much to determine your final job choices.
- But to do that you really should start to take a look at the clues available that will aid you in making a good career choice.
- In fact, trying to find some of the answers to your career choice is something like a detective trying to solve a mystery.
- Let's look at it this way and see if we can solve . . . .


THE CASE
OF YOUR
UNBORN CAREER
OR
THE SEARCH
FULLY DOCUMENTED
FILE NO. 001

HOW DO YOU BEGIN THIS CASE?

If you were a detective you might start by asking these two basic questions . . .



WHERE AM I GOING?

What kind of person would I like to be?

What kind of training and experience will I need to become that kind of person?

WHO AM I?

Do I know what are the important and unimportant things to me?

How much do I know about my interests, my abilities, my personality, or what others think about me?

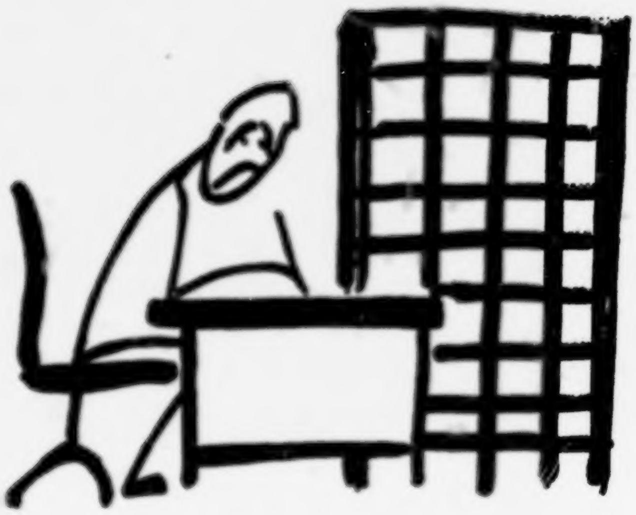
CLUE No. 1: INTERESTS

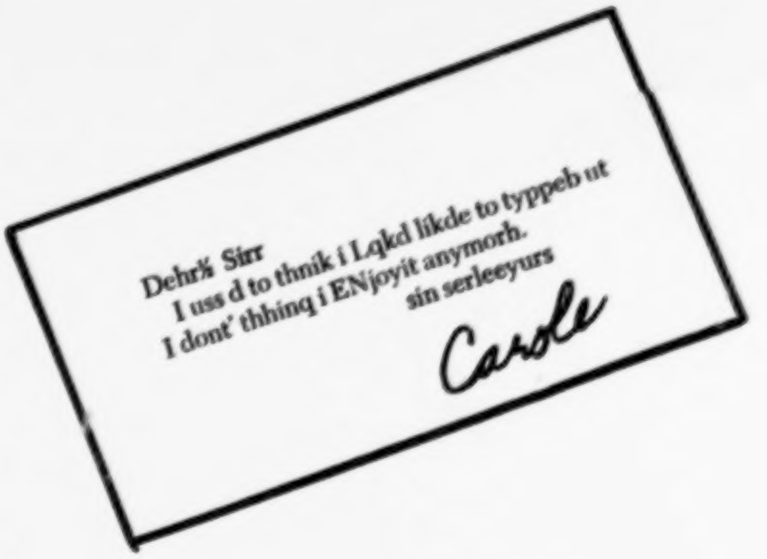
In thinking about your future you should think in terms of what you like to do.

It is well-known that the most successful and certainly the happiest individuals are those who enjoy what they do.

If you took the first choice that comes along merely because it seems easy and available, you may find that you've committed yourself to spending each day at distasteful or boring work.

It might be like sentencing yourself to prison for 8 hours a day, 5 days a week, 50 weeks a year!





Dehr's Sirr
I uss d to thnik i Lqkd likde to typpeb ut
I dont' thhinq i ENjoyit anymorh.
sin serleeyurs
Carole

A. HOW INTERESTS DEVELOP

Interests develop in many ways. One reason why we enjoy some things more than others is because we find we can do some of them better than others. Think back at your own interests and you'll probably see this is true for you too.

B. PATTERNS OF INTERESTS

Most jobs, however, require a variety of activities and can, therefore, satisfy a number of your interests.

For example, being a taxicab driver may be enjoyable for a person who (1) likes to drive (2) likes the city (3) likes to meet people (4) likes variety.

Or being a secretary might be enjoyable for a person who (1) likes to type (2) likes to work in an office (3) enjoys meeting people (4) enjoys talking to strangers (5) enjoys taking instructions.

It would not be usual for you to like *all* of the activities of a job but you certainly should like *most* of them.

C. INTEREST AREAS

It is not usually necessary or useful for you to try and pick a "right" job for yourself now. If the past experience in our country continues to hold, there is a good chance that the job you finally settle on isn't even in existence now!

It might be useful, however, to note that many jobs have activities in common and seem to require you to have interests in common.

For example, jobs in baseball, football, etc., have in common interest in outdoor sports.

Jobs in bookkeeping, income tax, and other business jobs may have a computational interest.

Some jobs combine interest areas. For example being a draftsman or civil engineer requires a person who is interested in artistic and computational things.

INTEREST AREA	WHAT IT MEANS	TYPICAL JOBS INVOLVED
Outdoor	You prefer work that keeps you outside most of the time. Most jobs deal with animals and growing things.	Forest rangers, naturalists, farmers.
Mechanical	You like to work with machines and tools.	Automobile repairmen, watchmakers, drill press operators, engineers.
Computational	You like to work with numbers.	Bookkeepers, bank tellers, accountants.
Scientific	You like to discover new facts and solve problems.	Doctors, chemists, nurses, engineers, radio repairmen, aviators, dietitians.
Persuasive	You like to meet and deal with people and to promote projects or things to sell.	Actors, politicians, radio announcers, ministers, salesmen, store clerks.
Artistic	You like to do creative work with your hands. The work usually has "eye appeal" and involves attractive design, color, and materials.	Painters, sculptors, architects, dress designers, beauticians, interior decorators.
Literary	You like to read and write stories, poems, or articles.	Novelists, historians, teachers, actors, news reporters, editors, drama critics, book reviewers.
Musical	You like going to concerts, playing an instrument, or singing.	Music teachers, organists, singers, members of band or orchestra, choir directors.
Social Service	You have a preference for helping people, especially those who are sick or needy or who have special problems.	Nurses, scout leaders, counselors, teachers, ministers, personnel workers, social workers.
Clerical	You like office work that requires precision and accuracy.	Bookkeepers, accountants, file clerks, sales clerks, secretaries, statisticians, traffic managers.

There are many ways to find out the areas of your interest. There are a number of objective tests you can take by seeing your counselor, such as The Vocational Interest Blank by Edward K. Strong, Jr., or the Kuder Preference Record—Vocational by G. Frederic Kuder.

This last test, the Kuder, will either help you classify your interests in general areas giving you typical jobs involved or will enable you (using another form of the test) to measure your interests against those of successful persons in each of fifty different types of jobs. The chart above is based on the Kuder.

Most of these interest tests you can take yourself, either at school or home in your leisure time.

CLUE No. 2: MEASURING ABILITIES

The chief clue here is to find out mental abilities in which you are highest. Don't fall into the trap of discussing your intelligence as something you either have or don't have. Think for a minute and you will realize that *everyone has many different kinds of abilities*—not just one "intelligence"—and that some are higher than others.

One good indication of the kinds of abilities you have are the school grades you get. However, they *can* be misleading. We both know that you can get low grades not because you lack ability but because you may have wasted time in the course, didn't study, or any number of other reasons.

You have already taken a number of tests in high school which, after discussion with your counselor, will help give you an idea of your pattern of abilities.

Remember now, the important thing is not so much *how much* ability you have but rather what your strong and your weak areas are.

Below is an example of the information you can gain by taking an aptitude or ability test. You may have taken this test already in high school.

THE DIFFERENTIAL APTITUDE TEST (DAT)

Aptitude Measured	What It Means	Typical Jobs Requiring the Ability
Verbal Reasoning	This may predict rather accurately your chances for success in fields where ideas have to be expressed in words; that is, where you must read a lot or write for publication or speak before groups of people. The more responsible the job, the more important it is to be able to reason things through.	Writing, law, ministry, journalism, teaching, executive and administrative positions.
Numerical Ability	This predicts success in subjects that require you to work with numbers and to solve mathematical problems; such as, mathematics, physics, chemistry, and engineering.	Accounting, banking, statistics, laboratory technology, engineering, chemistry.
Space Relations	This test measures the ability to imagine how objects would look if their positions were changed. It is the ability to plan how to build something and to picture how it will look when it is finished.	Drafting, dress designing, die making, architecture, interior decorating, any of the arts.
Mechanical Reasoning	This test measures the ability to learn such things as the principles of how machines operate or how to repair complicated equipment.	Carpentry, mechanics, maintenance work, jobs in plants and factories.
Clerical Speed & Accuracy	This test shows your ability to copy accurately, to pick out letters or words quickly, to record or arrange number and letter combinations.	Filing, coding.
Language Usage: Spelling & Sentences	These tests give you a good idea of your understanding of grammar and of your ability to see what are correct ways of writing, talking, and spelling.	Stenography, business correspondence, journalism, advertising, proofreading.

You should have taken all three of these types of tests in high school. They can give you valuable clues regarding your abilities

TYPE OF TEST	MEASURES	EXAMPLE*
Intelligence	Capacity for mastering problems.	SCAT
Achievement	Extent of knowledge in a particular subject.	STEP
Aptitude	Ease and speed with which new information or skills may be learned.	DAT

* These are initials of tests used. Ask your counselor about your scores on these or similar tests.

CLUE No. 3: AN INVESTIGATION OF YOU

Examine what you do

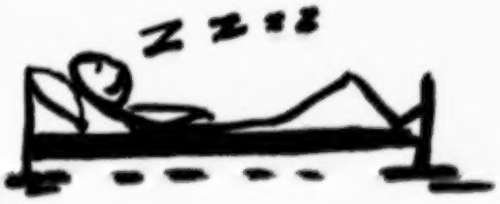
What kinds of things do you do well? What kinds of things give you trouble?

Sometimes others notice things about you that you overlook or don't realize.

Ask your parents, for example, what they think about what you do.

Compare what they say, as well as what others say, with your own ideas.

What do your **parents** think you do best at home?



What do **you** think you do best at home?

What do your **parents** think you do best at school?

What do **you** think you do best at school?

Examine your high school record

Your high school record, particularly your performance in the various subject courses you take, will give you valuable clues on what you can and cannot do well. If your record shows you are an able student in mathematics, for example, this is helpful not only to you but to the college of your choice, if you continue your education; it is of interest to a possible employer; and it may be useful if you go into the armed forces since it indicates the type of training that would be best for you.

What about outside activities

Succeeding in extracurricular activities often reveals a special ability. Think about yourself for a few minutes. Have you discovered whether or not you have leadership ability, that you can think logically, speak well, can write, are good in athletics, or in persuading others?

What are your hobbies

The kinds of hobbies you may have can often give you many clues about yourself. For example two boys may be interested in airplanes as a hobby. One, however, collects pictures of planes, reads books about them and pilots, and keeps up with new developments. The other boy is more interested in making small airplanes that actually fly. He has put together a small engine for this purpose and experimented with other engines in terms of the principles of flight.

Both boys, of course, had the same hobby, but each actually had two different kinds of interests and, perhaps, abilities.

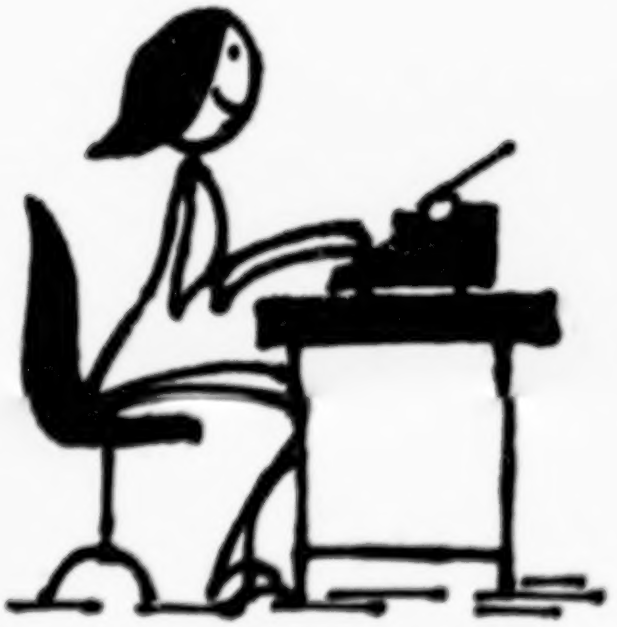
Summarize these clues

One good way of gathering these clues together is seeing your counselor and discussing with him the reasons why you feel you did or did not do well in the various courses. In this way you can better determine in what areas you were most successful and in which ones you were least successful.

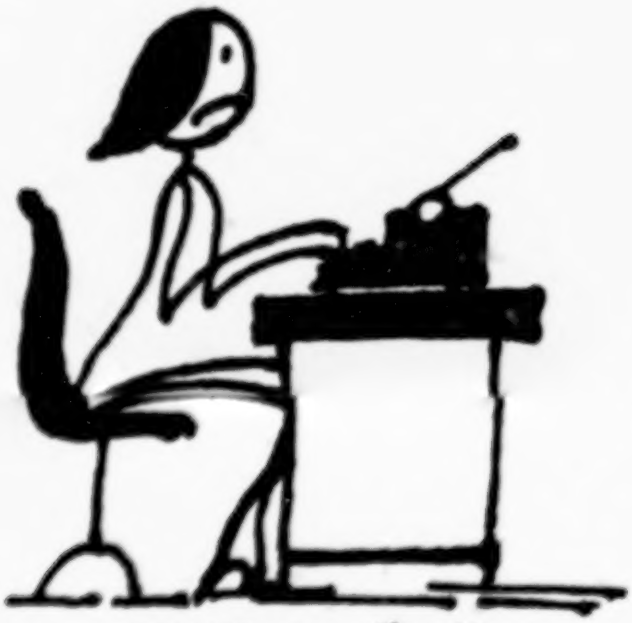
REMEMBER . . . being successful in any field involves much more than just having ability, however. Equally important are other qualities such as willingness to work, originality, getting along with other people.

CLUE No. 4: YOUR PERSONALITY

IF YOU WERE THE BOSS and were to promote only one of the two typists in your office which one would it be? *Typist A* who is skilled, trained, and likeable or *Typist B* who is equally skilled and trained but has a grouchy disposition?



TYPIST "A"



TYPIST "B"

Well, it's a good bet you'd pick *Typist A* who has the better relationships in the office.

Do you know that if you made that decision you would be making the same decision that millions of employers make all the time in every job.

In fact most people are successful not because they are more skilled than others but because they have that something extra—the ability to get along with others.

Of all the people who lose jobs, nearly 9 out of 10 of them do so because of poor human relationships; only a little better than 1 out of 10 lose their jobs because they do not have sufficient skills!

That doesn't mean you have to have "a life of the party" personality to succeed in a job. It does mean, however, that you should have enough understanding of yourself and the way others react so you can associate with people easily and well.

How do you find out about yourself? There are many ways but one easy way to start might be to rate yourself on a number of questions. Have some adults and high school friends whom you respect also rate you on the same questions.

Compare the results, discuss them with your friends, with your parents, or your counselor.

There are a number of pamphlets and books with rating charts available at your school. Ask your librarian or counselor to help you find them.

Below are some sample questions taken from a typical rating chart.

WHEN SOMEONE DOES A BETTER JOB THAN YOU, WHAT DO YOU DO?

☐ Compliment the other person

☐ Offer excuses for your performance

☐ Find fault with him

☐ Try harder next time

WHAT KIND OF PERSON DO YOU THINK YOU ARE?

☐ Pleasant and friendly

☐ Rather selfish

☐ Hard to get along with

☐ Other ....

☐ Easy to get along with

☐ Sometimes friendly; sometimes not

CLUE No. 5:

YOUR FUTURE PROSPECTS IN THE 1960's

The first important characteristic of the work force will be the presence of much larger numbers of young people than in the past, despite the fact that higher proportions will remain in school longer.

Even though the labor force is expected to grow by 1970 to 15% more than in 1960, those under 25 years of age now will total almost one half of this increase.

Those who reach age 18 in 1965 will number four million as compared to two million in 1955.

Those between 35 and 44, the key age group in the experienced work force, will drop from second to fourth place among all workers.

The second important characteristic of the work force will be the ever greater role of women workers.

Based on national studies most girls can expect the following life pattern:

1. *Most* unmarried girls will go to work at age 17 or 18 unless they go to college.
2. *Some* will stop work to get a new home organized but *most* will continue to help a husband through school, or to add to the family income.
3. *Most* young wives will give up their jobs when the first baby arrives and stay out of the work force until the youngest child no longer needs care—usually 8 or 10 years later.
4. When this occurs, about age 35, nearly *one-half* of the women will either be working or looking for work until they are 65 years old.
5. For the girl who remains single—1 in 10, the length of her working life will be little different from that of a man.

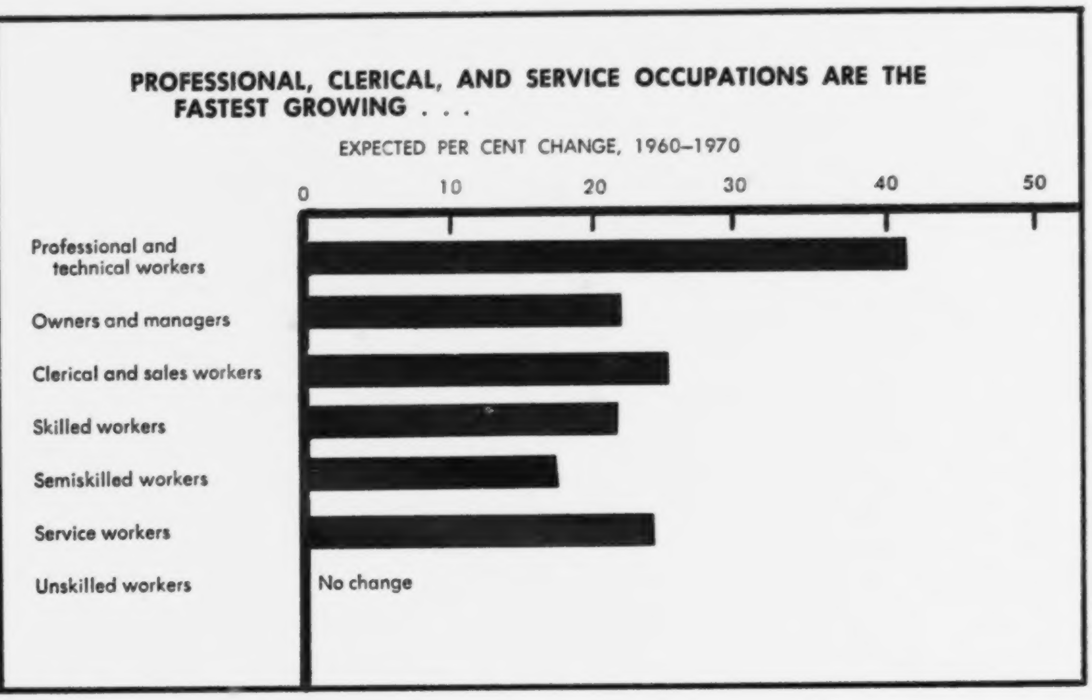
WHAT KIND OF JOB?

What can you anticipate about the kinds of jobs that will be available? There is little doubt that there are industries and occupations which are so small right now as to be hardly noticeable but which will, one day, become major fields of employment. A few years ago very few people even heard of occupations involving electronics, plastics, atomic energy, and others. Just as your parents, at your age, never thought of airplanes and television, as possible occupations so may your choices be as yet undeveloped occupational fields.

Who will employ the increased 13½ million workers in the next ten years?

1. Construction, finance, insurance, and real estate industries will grow far more rapidly than the average.
2. Less than average will be the transportation, communication, public utilities, and mining industries.
3. Agricultural employment will decline considerably.

The chances are, too, that the increase will not spread equally through the country. Greatest growth is expected in the West and Southwest: the least growth in New England, the Mid Atlantic and East North Central States.



PROFESSIONAL, CLERICAL, AND SERVICE OCCUPATIONS ARE THE FASTEST GROWING . . .

WHAT JOB CHANGES?

The principal occupational changes expected in this decade will be:

1. A continuing rapid growth in white-collar occupations, especially in the professions. The fast growth in this group will be the most highly educated—the professional and technical workers. The numerically largest white-collar group, the clerical workers will be next; the third group, the managerial group will increase less rapidly.
2. Among blue-collar workers, a slower growth in skilled and semi-skilled occupations and little change in employment in unskilled occupations. The skilled worker totaling 8½ million in 1960 will grow 25% during the decade. The economy will be looking for 5 million skilled men and women adequate to keep the new industrial revolution moving ahead.
3. A somewhat faster-than-average growth among service workers (waiters, policemen, practical nurses, barbers, etc.).
4. A further decline in employment among farmers and farm laborers.

MORE ON CLUE No. 4: UNDER THE MICROSCOPE

It is clear that many opportunities will open up for job seekers during the years ahead.
The ability of young people to take advantage of these opportunities will depend to an important extent on their education and training.

Since the fastest growing occupations also call for the most education or training it is clear that a young worker's chances for a good job will be much less if he does not have at least a high school education. For many "growth" jobs he must have considerably more.

As new automated equipment is introduced in offices, banks, insurance companies, and government operations, the skill requirements for clerical and other office jobs will rise also. The demand of employers for better trained persons to operate complicated and expensive machinery is already obvious.

In selling, too, new developments in machine design, use of new materials, and complicated equipment are making it necessary for salesmen to have greater understanding of technical matters; and repairmen must become familiar with ever more complicated machines.

By 1970 high school enrollment will double and college enrollment will be about 2½ times that of 1950. With so much competition from young people with higher levels of education, the boy or girl who does not get good preparation for work, either by completing high school or college or by some other good means, will find the going rougher and rougher in the years ahead.

EVERYTHING
POINTS
TO

MORE EDUCATION FOR YOU

THEN THE QUESTIONS ARE

WHAT KIND OF EDUCATION?

If you continue your education you will find that the various types of courses fall into three general classifications each serving a somewhat different purpose:

VOCATIONAL COURSES: Designed to develop some particular skill or to provide certain knowledge which is marketable. Such training includes, typewriting, stenography, mechanical drawing, printing, machine shop, etc.

GENERAL COURSES: These provide general information essential to understand the world in which we live, our present culture and its development. The purpose is not vocational, although what one learns in such courses often finds expression on the job. Examples of these courses are history, literature, music appreciation, government, general science, foreign language, etc.

PERSONAL DEVELOPMENT: This includes subjects which help us in a general way to express ourself and to think logically. Modern living requires of most people a minimum of proficiency in these basic fields. Examples are reading, writing, grammar, spelling, basic math, public speaking, etc.

The ideal educational program should include all three with the amount of each determined by your general interests and particular vocational plan.

WHERE CAN I GET IT?

LOCAL PUBLIC SCHOOLS: Further training in basic subjects, certain general courses, some vocational offerings.

PRIVATE SCHOOLS: Most specialize in a particular kind of educational program and many times select only those students who meet definite admission requirements. Included are trade schools, business, colleges, and schools of music, art, and dramatics.

PART-TIME AND EVENING SCHOOLS: It is possible to combine work on a job and continued study by attending a part-time or evening school. Varieties of trade and business subjects can be studied in night schools.

SUMMER SCHOOLS: Many high schools and colleges have developed special summer courses to make greater use of their facilities. They vary in length from two to twelve weeks.

UNIVERSITY EXTENSION: Those who can qualify at the college level may take part-time or evening courses. Thus it is possible to progress toward a college degree while on the job.

SPECIAL TRAINING ON THE JOB: To qualify their employees more rapidly or for better jobs, companies have courses which their workers may take. They are usually offered on company time and without cost. The individual is paid for studying as well as for his work.

CORRESPONDENCE COURSES: Hundreds of thousands have taken courses by mail order to qualify for a better job or for general self-improvement. Such courses are offered by both private and public schools. Almost any subject can be studied by mail.

and . . .

HOW MUCH EDUCATION DO I NEED?

That depends on your previous training, so it might be helpful to analyze your education and see where your needs are.

Try to answer these questions as carefully as you can:

Do you feel a special need for a broad cultural background? If so, in what subjects are your needs greatest? Examples are history, literature, music, art, government, science, philosophy, economics, psychology, mathematics, sociology, and religion.

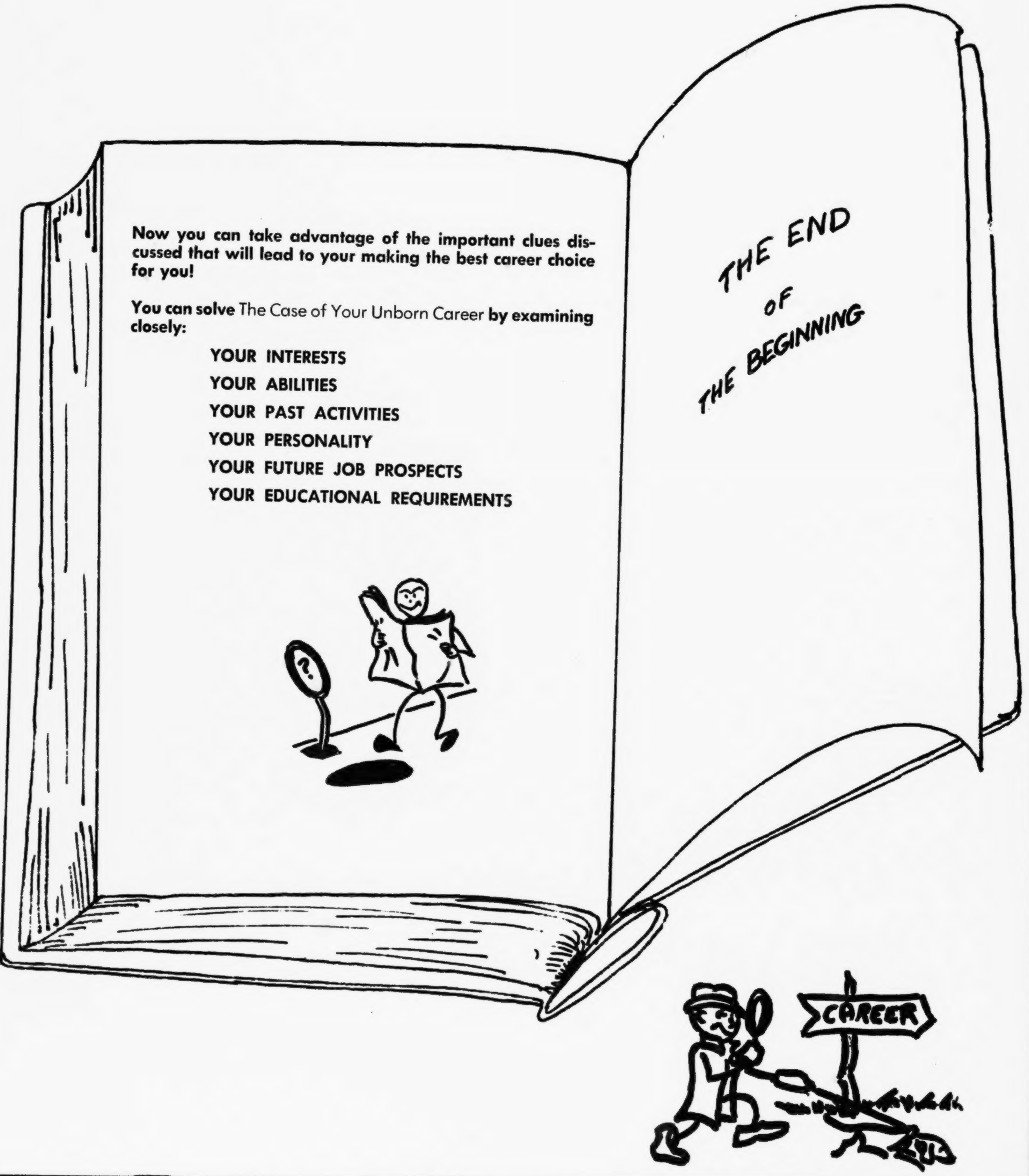
What do you consider to be your most marketable skills?

What are the advantages, the problems, and the disadvantages of further training for you?

Do you see any way by which the most serious difficulties may be overcome?

Will special training help you to develop any of the above skills to a higher degree?

Are you especially weak in any of the basic subjects such as reading, penmanship, spelling, arithmetic, quality of voice, word pronunciation, and public speaking?



Now you can take advantage of the important clues discussed that will lead to your making the best career choice for you!

You can solve The Case of Your Unborn Career **by examining closely:**

YOUR INTERESTS
YOUR ABILITIES
YOUR PAST ACTIVITIES
YOUR PERSONALITY
YOUR FUTURE JOB PROSPECTS
YOUR EDUCATIONAL REQUIREMENTS

REPORT FORM

Career Kit

Date:________________ Print Name:______________________________
First Last

The following questions have to do with your interests and abilities. Your replies will be treated confidentially and will not become a part of your school record unless you wish it so. Please be open and honest in answering the questions. Thank you for your cooperation.

For each of the words or statements in the following sections, you are to make a single choice by writing, in the space provided, the letter of the word or statement that best expresses your feelings.

SECTION I

A. Open your CAREER KIT to the page entitled "Clue No. 1: Interests" and look at the chart on the right hand page. For each interest area listed below, indicate how interested you are:

A. Definitely interested
B. Strongly interested
C. Somewhat interested
D. Probably not interested
E. Definitely not interested

1. Outdoor ___
2. Mechanical ___
3. Computational ___
4. Scientific ___
5. Persuasive ___
6. Artistic ___
7. Literary ___
8. Musical ___
9. Clerical ___
10. Social service ___

Now circle each "A" or "B" you wrote above and note from the chart in your CAREER KIT the typical jobs involved.

SECTION II

A. If you were to choose your vocation now, how much would you enjoy each of the following types of work?

A. Definitely enjoy
B. Usually enjoy
C. Sometimes enjoy
D. Seldom enjoy
E. Definitely do not enjoy

1. Group activity ___
2. Meeting new people ___
3. Seeking out new experiences ___

Career Kit (Cont'd.)

4. Activities involving authority ____

5. Influencing and directing others ____

6. Working with ideas ____

7. Being my own boss ____

8. Working with my hands ____

9. Working outdoors ____

10. Working for a large company ____

SECTION III

A. Rate yourself on your school ability -- not on your grades, but rather how capable you really feel you are.

A. Superior ability
B. A good deal of ability
C. Average ability
D. Some ability
E. Little ability

1. English subjects ____
2. Math subjects ____
3. Business subjects ____
4. Science subjects ____
5. Social studies ____
6. Overall ability ____

SECTION IV

A. Here is a list of some personality characteristics that are necessary for success on the job, which was developed by several groups of high school students. Respond to these words first as you see yourself, and then as you think your friends see you:

A. Always
B. Usually
C. Sometimes
D. Seldom
E. Never

	I see myself this way	My friends probably see me this way
1. Friendly	____	____
2. Cheerful	____	____
3. Pleasant	____	____
4. Reliable	____	____
5. Thorough	____	____
6. Neat	____	____
7. Confident	____	____

Career Kit (Cont'd.)

		I see myself this way	My friends probably see me this way
8.	Helpful	____	____
9.	Ambitious	____	____
10.	Persistent	____	____
11.	Patient	____	____
12.	Enthusiastic	____	____

SECTION V

A. Now lets summarize the above. Take a look at your answers in the foregoing sections and see if you can state in a sentence or two the best description of yourself:

1. Your interests:____

____

2. Your preference for a job:______________________________

____

3. Your personality characteristics:_________________________

____

4. Your ability:____

____

NOTE: I would like ____ not like ____ you to make this part of my counseling record when this research project is finished.

BOOKLET-MEDIATED STUDY

CHAPTER I

INTRODUCTION

Problem

The purpose of this study is to investigate experimentally some factors which may cause young people to become interested in particular occupations. An attempt will be made to discover whether there are certain experiences which can be provided by school personnel to generate an interest in exploring career possibilities.

The study is designed to provide at least some partial answers to two questions on which research was suggested in the November 1964 *Preliminary Statement of the Guidelines for the Occupational Research and Planning Program*:

(1) How can we encourage students to aspire to careers commensurate with their abilities and interests?

(2) What specific steps can be taken to motivate and re-orient youngsters crippled by an environment of deprivation?

The study has practical value for these reasons:

a. If young people were highly interested in entering an occupation, it would be more likely that they would take advantage of the job training opportunities made available to them. *U.S. News and World Report* (June 29, 1964) reported: "Four months after the government's offer of job training to youths rejected for military service--only one out of five rejectees has shown interest in the offer. Letters from the labor department, offering special vocational training, have been mailed to 134,500 youths who flunked the Selective Service mental examination. Only 23,600 letters have been received in reply."

If some means could be provided to generate interest in occupational opportunities, many more young people would be able to take advantage of the educational opportunities that our society has been and will continue making available to them. With the new training opportunities made available by the passage of the Vocational Education Act of 1963 and the Economic Opportunity Act of 1964, it is becoming increasingly important to find ways to motivate young persons to obtain the training for which they are qualified.

b. If potential drop-outs from high school were able to develop sufficient interest in an occupation which required them to obtain an adequate education, the probability of their dropping out of school prematurely would decrease. A continuing concern in our society has been the high rate of school drop-outs. Efforts have been made to counsel and encourage students to complete their education (Schreiber, 1964). The study attempts to discover whether young people who are given an experience designed to interest them in an occupation will drop out of school less frequently than those not given this particular type of experience. Automation and the increasing skill requirements for the work force make it increasingly necessary that some way be found to interest potential drop-outs in learning.

c. All young people need to have some method of testing their own reactions to the tasks required of them by various occupations. One of the greatest unsolved problems facing school counselors concerns young people who have no idea of a vocational choice. Most young people would like to be able to decide on some type of a goal, but their knowledge and experience are so limited that they cannot make even a tentative decision.

As Samler (1964)puts it, "One of the key problems confronting the counselor has to do with making the work world real. For many youths the situation is such that they are not confronted with the reality of work. They are separated from it physically and even vicariously" (p. 412). The problem stems from the fact that there are very few opportunities available to young people in which they can actually solve the types of problems faced by people in each of many occupations. Young people may observe employed persons at their work, but even then they see only the outward manifestations of the job, not the problem-solving process itself. An adolescent may have virtually no idea of the problems and responsibilities faced on the job by his own father. Even though he may see his father at work on some occasions, he sees only the superficial aspects of the job. He may see his father signing his name, punching a calculator, talking to a secretary, pushing buttons, or adjusting machinery. But the youth has no conception as to what is being accomplished, how this job fits into the total process, what problems must be solved, and most of all he has no idea whether or not he himself could do the job.

The materials developed in connection with this study should hopefully enable a young person to see a job from the inside out rather than the outside in. The materials will give him an opportunity to solve a simple but realistic problem similar to those solved by members of each of several designated occupations. The young person should be able to feel what it is like to solve the problems of a particular occupation and thus be in a better position to evaluate whether or not he himself would like to engage in similar kinds of activities in the future.

d. Occupational information will be more meaningful and relevant to people who have had an opportunity to experience the problem-solving tasks connected with a particular occupation. Occupational files are notorious for their limited usefulness to the majority of high school students. Even when the materials are well written and up-to-date few students are sufficiently interested to read them. It is very difficult for a high school student to imagine

> himself as an employed person two, four or eight years in the future. The dry, dull facts about average annual salaries, occupational trends, and the nature and conditions of employment have a difficult time competing with the far more compelling social interests of the moment. Yet these facts are relevant to the future welfare and success of each individual. The realistic problem is in finding a way to get students sufficiently interested in studying their future career possibilities that they will read and relate facts about occupations to their own tentative decisions. If suitable interest-generating materials were available, it seems likely that more young people would be able to use these facts about occupations in making their own career plans.

The theoretical implications of this study are at least as intriguing as the practical implications. The basic theoretical question is this: What are the factors that cause a person to enter any given occupation? Factors influencing career choice have been studied by counseling psychologists, sociologists and others for many years. A number of very interesting and valuable studies have been conducted to identify some correlates of various occupational interests. These correlates of interest appear to be remarkably stable over time and enable us to predict with considerable accuracy the particular occupation certain persons will in fact enter. Other studies have examined the personality factors, family factors, socio-economic factors, and experience factors which are correlated with various occupational interests. So far, however, almost all of these studies have been either descriptive studies or correlational studies and hence cannot identify causes with any known degree of certainty.

Experimental investigations of factors possibly leading to the generation of interests have not been conducted to any extent to date. Thus, although we know many factors which correlate with occupational interests, we do not know what factors cause them. The correlational and descriptive studies have been very valuable in providing leads about causative factors, but the very nature of correlational studies precludes an inference of causation with any know degree of certainty. Beilin (1963) has advocated a shift from naturalistic observation to laboratory and controlled field experimentation. This study is an experimental investigation in which certain experiences are designed and randomly assigned to students in accordance with modern experimental design principles. In this way we shall be able to make assertions with a known probability of error about the extent to which certain specifically described experiences cause young people to become interested in certain defined occupations.

Related Research

So much has been written on the development of occupational interests that it would be impossible to do justice to this literature in the brief space available here. Although a great deal of research has been done and much more has been written, the fact remains that we still know virtually nothing about the specific factors causing interests to develop.

Hoppock (1957) has listed eighteen theories of vocational choice and development. An extremely extensive and critical discussion of the theories and research in the area of career choice has been provided by Darley and Hagenah (1955).

At the present time according to Holland (1964) there are five major research programs concerned with vocational behavior: (1) Super's work on vocational development at Columbia University; (2) Tiedeman's work on career development at Harvard University; (3) Roe's work on vocational choice at Harvard University; (4) Holland's studies of vocational behavior at the National Merit Scholarship Corporation; and (5) Flanagan's studies of vocational behavior at the American Institutes for Research. All five of these major programs of research are correlational studies designed to relate vocational behavior to other data collected at the same or an earlier time. None of them involve experimental controls. In his critical evaluation of these programs Holland stated that "the goals of all major research programs are unnecessarily ambiguous and they even tend to vacillate from time to time" (p. 277), and that "most of the empirical research has been done with atypical samples (eminent scientists, National Merit finalists, and Harvard students), or with samples so small that actual predictive studies of choice or career pattern are not feasible (e.g., Super's career pattern study)" (p. 278).

One of the fundamental difficulties in discussions about occupational interests is that the term "interest" could be eliminated by merely substituting the particular criteria which will be used to assess the effect of the treatment conditions. Thus for purposes of this study a person could be said to have an "interest" in a particular occupation if he states that he wishes to become a member of that occupation, if he makes efforts to obtain additional information about that occupation, if his scores on the Kuder Preference Record Form C are consistent with the interests of those people engaged in that particular occupation, or if he indicates a willingness to undergo the training necessary for him to become a member of that occupation. Such behaviors are all observable and will be considered to be indicative of an "interest" in an occupation.

The early work of Thorndike (1935) does not seem to be popular among those now generating research in the field of interest development, although much of what he said still has relevance. Among the forces which can be used to modify interest Thorndike listed contiguity, suggestion, imitation and conditioning by rewards and punishment. Conditioning by rewards and then associative shifting was seen by Thorndike as accounting for the great bulk of the modifications made in human behavior in general and probably of the modifications made in interest and attitudes in particular.

Theorizing in the field of interest development has been done by Ginzberg and others (1951), Carter (1940) and Bordin (1943). Like Thorndike, Strong (1943) believed that associative learning theory would account for most of the change of interest or occupational choices. However, by 1960 Strong in reviewing his 18-year longitudinal study suggested that interests are "discovered" rather than learned, although it should be pointed out that his research was not designed to determine how interests originate.

What are the factors which influence occupational choice? Unfortunately the only evidence that can be brought to bear on this question is descriptive or correlational in nature. We can describe the traits, characteristics and current behavior patterns of people currently engaged in each of a number of occupations and we can relate stated interests in these occupational areas with reported or observed traits and behavior at earlier periods of time, but such descriptions and relations do not enable us to make a conclusive assertion as to what caused the interest to develop in the first place.

A review of the descriptive and correlational evidence, however, may be instructive in generating hypotheses about some of the causal factors. For example, when a selected sample of Negro male high school students were asked as to what was influencing their occupational choice, 70 percent said that they knew people in the field to which they aspired and 77 percent of those people said that their choices were influenced by these people. Occupational aspirations were also thought to be influenced by mass media (Uzzell, 1961).

Matteson (1955a) prepared an activity check list consisting of 200 items on which college students were to respond on the basis of experience and interest. For eight of the ten interest-experience areas correlations between amounts of experience and amount of interest was greater than .40. Later Matteson (1955b) found a Rho coefficient of .88 computed from the rank differences of the respective gains of interest and experience in the ten areas. Categories showing the greatest gain in interest tended to be those showing the greatest gain in experience. It should be pointed out however that the precise nature of each of these experiences, that is whether they involved success or failure, satisfaction or frustration, participation or observation, etc. was not considered.

As Kenneth E. Clark pointed out in the comment following this article, "Perhaps we ought better examine responses to items, rather than scores on scales. This removes the necessity for prior judgments about categories, and increases the likelihood of reflecting whatever significant relevant experiences that student has had." Evidence that interest and experience are correlated was also provided in Bordin and Wilson (1953) who found that curricular shifts were accompanied by changes in Kuder profiles. The present experiment will follow-up on this lead that experience and interest are positively correlated by investigating the precise nature of an experience that may generate interest.

Warren (1959) found that job satisfaction was related to the consonance of measured interests with a person's present occupation. The women who claimed they worked for the sake of work itself had higher job satisfaction scores than did those whose reasons for working were extraneous to the job itself. Some correlational evidence on the origin of women's interests was reported by White (1959) who discovered that girls with career interests tended to come from homes in which the male parent was deceased or in which there was little communication between the girl and her parents.

Socio-economic background has been assumed to be one important factor in generating occupational interest. Hollingshead (1949) found that education is not important to the lower class, the rewards not worth the effort and the goals not achievable. The lost manpower of those of high ability and low socio-economic class was mentioned by Beilin (1957) who pointed out that schools are essentially middle-class, the lower class participating only minimally and being rewarded little.

Some means is necessary for the youth of all socio-economic classes to discover exactly how tasks are solved by members in various professional occupations, to see that the solving of such problems might actually be enjoyable, and most of all to convince themselves that they are capable of solving these types of problems. In her work with eminent scientists Roe (1951a, 1951b, 1953) generally found that her successful groups came from above average socio-economic backgrounds. On the basis of this work she set up a series of hypotheses about early family influences in career development. These hypotheses have not been borne out by subsequent correlational research such as that attempted by Hagen (1960). Roe herself states: "The evidence seems clear, even allowing for the methodological limitations of these studies, that the relationship predicted between parental attitudes in childhood and later occupational selection does not hold for individual groups of occupations" (1964, p. 209). However, the difficulty in validating the relationship between early experiences and subsequent events is such a thorny and tangled problem that the relationship cannot be discounted on the basis of preliminary evidence. Clear-cut experimental evidence is needed to clarify the nature of exactly what types of experiences cause what type of interests to develop.

Super and Bachrach (1957) have described the characteristics of scientists, mathematicians and engineers. A more recent study of scientists by Meyer (1961) reveals factors associated with the development of an interest in science. These factors include participation in a physical science course in the early grades, development of self-sufficiency in looking up material, association with interested classmates, and a democratic home. Mierzwa (1961) in reporting on some of the results of the Harvard studies reported that the best predictor at the eleventh grade level to differentiate the science from the non-science group was the interest system. Ability and environment were secondary in differentiating the two groups. Personality as measured by the Rorschach was unrelated. Unfortunately, like all correlational studies the results of this study were confounded by a number of uncontrolled variables including the fact that all of the science group were headed for college while many of the non-science group were not aspiring to higher education.

Tyler has embarked upon a longitudinal study to try to understand the development of interests (1951, 1955, 1959). She found that special abilities seemed to correlate with interest for boys but not for girls. She found that "like" responses were far more numerous than "dislike" or "indifferent." A tendency to like something did not carry with it the tendency to dislike something else. She hypothesized that patterned interests develop through the acquisition of dislikes by individuals whose initial attitude is favorable toward everything, not through the emergence of both likes and dislikes on a neutral ground. Thus, one value of the present experiment may be in helping some young people to discover some activities which they do not like.

Hoppock (1957) has discussed some of the tools which are available to vocational counselors to aid in directing the developing interests of their counselees. Such activities as vocational courses, practical learning of vocational skills, visiting factories and other places of business, and bringing into the school setting people involved in various occupations are all thought to be helpful in developing interests. Unfortunately, these activities have not been evaluated for their effect upon occupational interest. Most of the students who were questioned about the value of a vocational course reported that it was valuable but such testimonial evidence cannot be given much weight.

One of the few experimental attempts to generate interest was reported by May and Lumsdaine (1958). They found that showing the movie of a novel did not necessarily cause students to take that book out of the library, but showing just a few interesting episodes did increase the number of students withdrawing the book. Perhaps, by presenting just a few interesting problems in an occupation and allowing students to try their hand at solving them, students will be motivated to engage in a more extensive exploration of new opportunities.

From this review of literature it is clear that no one can yet point to any particular type of experience which can be said to generate a particular occupational interest to any known degree of probability. The line of experimental research presented here will be the first to explore experimentally some of the factors believed to cause occupational interest to develop.

Objectives and Hypotheses

This research study is designed to test the effect of occupational problem-solving procedures in relation to two control procedures: non-problem solving and occupational information. The following directional hypotheses will be tested:

1. Tenth grade students given an opportunity to solve simulated problems connected with a particular occupation will engage in more occupational interest-indicative activities than equivalent non-problem-solving students.
2. Tenth grade students given an opportunity to solve simulated problems connected with a particular occupation will engage in more occupational interest-indicative activities than equivalent subjects given occupational information descriptive of that occupation.

Possible interaction effects will also be tested. The possible interactions will be stated as null hypotheses:

1. There will be no interaction between the problem-solving and control procedures and the sex of the subjects. A test will be made to determine whether the materials have the same effect on both boys and girls.
2. There will be no interaction between the problem-solving and control procedures and the schools at which the experiment is conducted. A test will be made to determine whether the materials are equally effective at a suburban high school and a high school in a less

economically privileged community.

3. There will be no interaction between the problem-solving and control procedures and the particular occupations chosen for investigation. A test will be made to determine the relative effectiveness of the materials prepared for each of three occupations.
4. There will be no second or third order interaction effects. A test will be made to determine the relative effectiveness of the experimental materials for each of three occupations in each of two high schools for both boys and girls.

CHAPTER II
METHOD

Sequence of Events

The study progressed through the following sequence of events:

1. Selection of occupations for treatment.
2. Isolation of workable problems in the selected occupations.
3. Development and testing of the problem-solving materials.
4. Development of control materials.
5. Development of criterion instruments.
6. Selection of schools and subjects.
7. Pre-treatment session.
8. Treatment session.
9. Post-treatment session
10. Analysis of experimental data.

This sequence is the basis of organization of the *Method* section of this report. The analysis of the experimental data is reported in detail in the *Results and Discussion* section.

Procedures

Selection of Occupations

The decision about which particular occupations should be selected was an important one. The following criteria were established to aid in the choice of an appropriate set of occupations:

a. The occupations must be open to both men and women;

b. The occupations selected must not be the "glamour" jobs which many students already aspire to on the basis of superficial information;

c. The occupations must be in some social demand according to the best estimates available to the U.S. Department of Labor and the demand should clearly be present in the local area where the studies are being conducted.

d. The occupations should represent a variety of skills;

e. No rare or unusual skill is required for successful performance in the occupation;

f. A number of related occupations at lesser levels of skill are also available in case the person is not successful in achieving the designated occupation.

On the basis of these criteria three occupations were initially selected and contracted for development. However, four occupations (in addition to the banking careers in the first section of this report) were eventually developed, as follows:

a. Accountant (D.O.T. 160.188). Accounting is the second largest field of professional employment for men. While it is true that fewer than ten percent of all accountants are women, the field is open to women. Most employers require a four-year college or university education emphasizing liberal arts and business administration as well as accounting. According to the Manpower Resources of the San Francisco-Oakland Bay Area (1960-1970) the supply of workers meeting these requirements will fall far short of demand. Persons with training in accounting will also be needed for jobs such as programmer, systems analyst, management trainee. A number of related occupations are available including ledger or cost clerks, bookkeepers, junior internal auditors, business executives, accounting machine repairmen, etc.

b. X-Ray Technician (D.O.T. 078.368). About three-fourths of all X-Ray technicians are women, although the number of men in the field has been increasing. Employment opportunities for medical X-Ray technicians are expected to remain excellent through the next decade. The increasing use of X-Ray equipment in the diagnosis and treatment of disease, and the continuing expansion of this use are the leading factors in the very rapid growth in employment. Additionally, more workers will be needed to help administer radiotherapy, as new knowledge of the medical benefits of radioactive material becomes more widespread. Routine X-Raying of large groups of people will be extended as part of disease prevention and control programs. Replacement demands are also anticipated to continue to remain high.

c. Medical Laboratory Technologist (D.O.T. 078.281,.381, .687). Employment opportunities for medical technologists are expected to remain excellent through the mid-1970's. New graduates with a Bachelor's degree in medical technology will be sought by employers to fill entry positions in hospitals. Employment prospects for medical technologists are expected to expand as physicians increasingly depend upon laboratory tests in routine physical checkups as well as in the diagnosis and treatment of disease. Also, the construction of additional hospital and medical facilities will increase demand. Other factors affecting growth in this field are the increasing complexity of laboratory work and the development of new drugs and techniques. Newly developed automated equipment is not expected to affect materially the demand for highly qualified medical technologists as these machines require well-trained persons to operate them. Replacement needs are likely to continue to be high because many workers in this field are young women who may leave their jobs for marriage and family responsibilities. Many opportunities for part-time employment are also likely to continue to be available.

d. Salesperson (D.O.T. 260.-290.068, .118, .128, .158, .250, .258, .383, .858). The precise nature of the sales job depends in large part upon the product or service being sold. Two and one-half million salespersons (more than half of them women) were employed in 1960 in about seventy different kinds of retail businesses. Women outnumber men in department and general merchandise stores, though more opportunities for men are available in wholesale trade and as manufacturers' sales representatives. A persistent demand for well qualified salespersons is in evidence both in good times and bad. In the San Francisco-Oakland Bay Area the forecast for sales occupations envisions a somewhat faster growth rate than was registered by sales occupations in the 1950 through 1960 period. "The increase is based chiefly on the anticipation of business expansion, population growth and further increases in personal income. More sales workers will be required by wholesale and retail trade and manufacturing--the industry divisions with the largest proportion of their work force in sales occupations--as well as by the rapidly growing finance division. Population growth and the rising personal income level, by stimulating the demand for goods and services, increased the need for almost all sales workers" (Manpower Resources, pp. 38-39). In view of the wide range of products and services to be sold, a person of virtually any skill level who was interested in a selling position should be able to find a job at an appropriate level.

These four occupations taken together represent the medical and social service areas of interest, the computational and business detail areas of interest and the business contact type of interests. While four occupations cannot possibly represent adequately all the fields of occupational endeavor, it is believed that they provide a sufficiently representative sample to determine whether or not interest-generating materials may be effective.

Development of Experimental and Control Materials

The experiment to be described here utilized the materials for three of the occupations: medical laboratory technology, X-Ray technology, and sales. Three types of materials were developed for each occupation: problem-solving materials, non-problem-solving materials, and occupational information materials.

Problem-Solving Materials. The development of the vocational problem-solving booklets for the three occupations followed a common plan. Representative problems encountered by workers in each of the occupations were isolated. It is important to emphasize that the jobs were examined from the standpoint of the problems solved by workers in particular jobs, not from the standpoint of job descriptions or characteristics. For example, a medical laboratory technologist must be able to use a binocular microscope; this is a job characteristic or requirement. Further, he must be able to classify types of corpuscles and reach a conclusion based on the resulting blood count; this is a problem-solving condition within this particular job. From a list of possible problems, those that lent themselves to convenient construction into booklet or kit form were chosen. Library resources and the advice of workers in these occupations contributed to the final decisions about the problems to be presented.

The following criteria were established to guide the preparation of these materials:

a. The problem should be representative of the type of problems faced by members of the chosen occupation.

b. The problem should be worded in sufficiently simple language that reading ability is not a significant factor in problem solution for the ninety-five percent of the target population.

c. The problem should be of such a nature that it is intrinsically interesting to the majority of the target population.

d. The difficulty level of the problems in the initial materials should be established so that approximately seventy-five percent of the target population can solve the problems successfully within 50 minutes which is the typical length of a class period.

e. Representatives of the particular occupation will judge the problem-solving tasks as representative of their occupation.

The problems selected were: (1) for sales, preparing a sales presentation geared to the interests or needs of a prospective customer; (2) for medical laboratory technology, identifying and classifying types of blood cells; and (3) for medical X-Ray technology, identifying defects in X-Ray plates.

Preliminary manuscripts of the booklets were prepared and tested individually on four to six students from the target populations. The students' performances were carefully observed and recorded in order to detect difficulties arising from unclear directions and descriptions, level of vocabulary, faulty organization of material, and unrealistic time allotments. At this developmental stage the manuscripts were submitted to experts in these occupations for their comments and suggestions regarding the accuracy of the informational content and the realism of the problem situation presented.

The manuscripts were revised to incorporate the comments, suggestions, and observations obtained from the earlier stage of development. The resulting booklets contained the following characteristics:

1. The materials described the importance of the particular job, information needed to solve a problem, tests to ascertain comprehension of the instructional content, problems, and their solutions. The presentation of information, questions, problems, and answers followed a modified programed instructional design. Questions and problems became progressively more difficult within each text, but the cumulative tallying of scores for correct answers provided periodic rewards for the students.
2. The language employed throughout the texts was colloquial and adjusted to the target population. Unusual or technical terms were carefully defined. Slang expressions were avoided, however, to preclude dating the materials or emphasizing regional language fashions.
3. The covers, bindings, and printing were identical for all texts; each was also the same dimension, 8 1/2"x 11" though the number of pages varied for the different occupational booklets.

Finally, the revised materials were tested on classroom groups of approximately 30 to 35 students each. These groups resembled in all respects the eventual target population. Student reactions and any administrative difficulties were taken into consideration in making the final revisions for the major experiment.

Non-Problem-Solving Control Materials. Once the problem-solving kits were completed, parallel materials were devised. These kits, in all respects but one, were identical to the problem-solving ones; instead of having the reader solve the problems or answer the questions, the solutions and answers were given. The student only had to read the booklet.

Occupational Information Control Materials. The physical appearance of these booklets resembled that of the problem-solving and non-problem-solving materials. They contained, however, information extracted from the Occupational Outlook Handbook (1961) and the Occupational Guide pertinent to the occupations concerned in the other two booklets.

Career Information Control Materials. These kits contained suggestions to the student for assessing his interests, likes and dislikes, and skills and abilities in relation to exploring possible careers. They suggested information that would be important to know in deciding on a career or a range of possible careers. No information was given on any specific jobs, occupations or careers.

Irrelevant Control Materials. These booklets consisted of a short, elementary programed text on educational measurement. No occupational or career information was given.

Answer Forms. Although only the problem-solving materials required subjects to write answers to questions from the booklet, all three booklets had an accompanying answer form. For the four types of control materials the answer forms contained questions about the student's career interests. All answer forms contained suggestions to help the student locate occupational information and to frame appropriate questions when inquiring into jobs.

A unique feature of the answer forms was that they were printed on two-ply sheets with carbon inserts. This feature enabled the experimenters to keep one form for their records, and the student to keep a record of his scores (if he worked with a problem-solving kit), in addition to the suggestions for sources of occupational information.

Subjects

Two California high schools were chosen for tests of the hypotheses. One of the schools, Cubberley High School, Palo Alto Unified School District, is an upper middle-class suburban high school located in a residential community approximately four miles from Stanford University. The second school, James Logan High School, Union City Unified School District, is a lower- to lower middle-class high school situated approximately 15 miles south of Oakland, California, in an agricultural-industrial fringe of an expanding metropolitan complex.

A total of 561 subjects were used in the study. This figure represents the entire tenth grades, less absentees, for both high schools. The distribution of the subjects by school and sex is shown below.

TABLE 1

DISTRIBUTION OF SUBJECTS
BY SCHOOL AND SEX *

	Boys	Girls	Total
Cubberley High School	141	168	309
Logan High School	104	148	252
Total	245	316	561

* Subjects who were absent from class during the treatment session, post-treatment session, or both, were excluded from the study.

Conduct of the Pre-Treatment, Treatment, and Post-Treatment Sessions

A seven day period separated the pre-treatment from the treatment sessions; another seven days separated the treatment from the post-treatment sessions. Pre-treatment sessions at both high schools took place in the first week of May, 1966, followed by treatment sessions in the second week and post-treatment sessions in the third week. These sessions were scheduled and completed on one day at each school; for example, pre-treatment sessions at Logan High School were on May 6, 1966, treatment sessions on May 13, and post-treatment sessions on May 20. The time interval between the pre-treatment and treatment periods was not an important methodological matter, but a constant interval for all groups of subjects between the treatment and post-treatment sessions was critical. For the scheduling convenience of the schools, fixed intervals between all sessions was most helpful.

Pre-Treatment Session

During the last 15 minutes of each tenth-grade Social Studies class on the specified day, a project research assistant was introduced to the students by the instructors. The instructors had no knowledge of the project with the exception of knowing by way of their departmental superiors that the research assistants were from Stanford University and were collecting information about occupational interests of tenth-graders. The assistant stated the purpose of the visit to the students, asked them for their cooperation, and distributed the High School Vocational Survey (Appendix A-3). He read the directions aloud and posed an example item (not one from the list on the Survey) in order to clarify directions or procedures for using the form. Aside from answering questions about the directions the assistant said nothing more about his purposes or the use of the information. As soon as each student completed his survey form, the assistant collected it, and upon gathering all of the forms, thanked the class and left the room.

Extra survey forms were left with the teachers for any students who were absent. Forms from absentees were collected during the following week.

Treatment Session.

An entire 50 minute class period was used for the administration of the treatment and control materials. A project research assistant was introduced to the class by the instructor, who remained in the room in the event that control might be needed. The research assistant explained to the students that he would like them to work with the booklets handed to them and that he would tell them more about the booklets and the project at a later time. He distributed the booklets by placing one booklet on each occupied desk, one row at a time. The control and treatment booklets had been randomly ordered prior to the class meeting. Students were instructed not to trade booklets, to work only in the one given to them, and as soon as they had finished to notify the assistant.

The use of the booklets required no instruction beyond that to begin with the first page and to follow the directions as they appeared. The texts varied in length, however, and the students completed their work at different times. The classroom instructor gave homework reading assignments to the students as they completed their booklets. At that time, also, the finished booklets were collected to reduce the opportunity for exchanges with other students.

Five minutes before the end of the class period, booklets of any students who had not completed their work were collected. When the dismissal bell rang, the assistant stood at the door and handed a post card to each student as he left the room. This card (described fully under Criterion Instruments) enabled the student to request occupational information if he so desired.

Post-Treatment Session

Seven days following the treatment session the project research assistants administered three survey forms (See Criterion Instruments) to the classes. The forms were distributed in the following sequence: the High School Vocational Survey (the same form used in the pre-treatment session), the Vocational Planning Questionnaire, and the Student Reaction Sheet. When the students as a class completed one form, it was collected and another form distributed. When the last form was collected, the assistant answered questions from the students about the project. The entire time required for these activities varied from 30 to 40 minutes depending on the amount of questioning from the class. Administration of the forms themselves required 20 to 25 minutes.

Criterion Instruments

Four instruments were developed to assess the treatment effects. These instruments were: (1) the Student Reaction Sheet, (2) the Vocational Planning Questionnaire, (3) the High School Vocational Survey, and (4) a post card form for requesting occupational information.

The Student Reaction Sheet (Appendix A-1). This form was developed to obtain the Ss' opinions of and reactions to the kits that they worked on during the treatment session. The sheet contains eight multiple-choice items asking the student's opinions of the specific booklet in which he worked, his estimated understanding of what people do in certain jobs, and his estimated enjoyment and ability in performing this job.

The eight questions on the Reaction Sheet are:

1. To what extent would you like to work on another booklet written in the same manner as the one you worked on one week ago?
2. To what extent would you like to explore a number of different occupations?
3. Do you now know better exactly what people in a certain occupation do?
4. Do you find that you had to change some of your ideas about what people in a particular occupation do?

5. Are you now more certain than before that you could be successful in an occupation?

6. Do you now know better what it would feel like to work at a particular occupation?

7. Do you now know better exactly what would be expected of you on a job?

8. Do you feel that you know better now what you yourself would enjoy and be good at in an occupation?

All of the items are straightforward questions of opinion. The response alternatives are organized as five-point rating scales, except for Item 2, a four-point scale, and Item 4, a three-point scale. In all criterion measures response alternatives were keyed such that higher numbers corresponded to more desirable outcomes.

The Vocational Planning Questionnaire (Appendix A-2). The purpose of this questionnaire was to obtain information about the information-seeking activities of the Ss during the post-treatment period. The form contains five questions, three of which are subdivided into two items. Below are the five questions.

1. During the past seven days how much time have you spent talking about your possible future occupations?

   1a. If you checked "None," explain what your career plans are:

   1b. If you did talk with some persons about possible occupations, check who they were below and give their names.

2. Did you mail the post card requesting information about occupations?

3. During the past seven days have you written anywhere else for occupational information?

   3a If you answer "No," explain what kind of information you would like to have:

3b. If you answered "Yes," tell what you requested (the kind of information and/or whom you wrote to):

4. During the past seven days have you read any books or pamphlets about any jobs or about choosing an occupation?

4a. If you answered "No," tell what kind of books or pamphlets would be most helpful to you:

4b. If you answer "Yes," tell what you can remember about one thing you read:
Its title was something like
I obtained it (Where?)

5. Realistically, when it comes to choosing a job I will (Check what you really will do.)

☐ wait until I'm about ready to start a job and then take the best job I can find.

☐ find out soon what the opportunities are for me in various occupations.

Seven days elapsed between the treatment session and the administration of the criterion instruments. The Vocational Planning Questionnaire covered the possible interest-indicative activities in which the S may have engaged during that time period. The items were directed to gathering information about the amount of time spent talking about future occupations, persons with whom the student spoke about jobs, materials read or written for, and the anticipated method of choosing a job. Included, also, in the form was an item (#2) to enable the experimenters to estimate the validity of the information given. All students were given a post card for requesting occupational information (See Appendix A-4). The addressee was the principal investigator. Cards sent within the seven day period were compared to each S's response to Item 2 as a validity check.

The items on this form, except Item 5, requested information that could be objectively verified. For example, the experimenters could check with individuals with whom the S said he spoke in order to confirm the response.

The High School Vocational Survey (Apprendix A-3). The purpose of the vocational survey was to identify changes in interests in certain occupations as a result of the problem-solving treatment. This form, which was administered during the pre- and post-treatment sessions, lists 15 occupations and asks the S to indicate his interest in each of the occupations and the degree of certainty of each response. Included in the 15 occupations are the three concerned in the vocational problem-solving kits as well as several occupations related to each of them. Additional irrelevant occupations are also listed. The occupations on the High School Vocational Survey are:

Scientist

Bank Teller

Accountant

X-Ray Technician

Insurance Agent

Nurse

Writer of advertising

Medical Laboratory
Technologist

Office Worker

Sales Manager

Doctor

Office Manager

Salesman/Saleswoman

Hospital Orderly

Dental Assistant

For each occupation the student was asked first, to indicate his current interest by marking a square on the following scale:

VERY MUCH	QUITE A BIT	SOME	VERY LITTLE	NOT AT ALL

Second, he was asked to indicate the degree of certainty of his current interest in each occupation.

POSITIVE	VERY SURE	FAIRLY SURE	NOT VERY SURE	NOT SURE AT ALL

The Post Card (Appendix (A-4). At the termination of the treatment session a post card was handed to each S. This card contained on the reverse side the same 15 occupations that appeared on the High School Vocational Survey and space for the student to give his name and address. He was instructed to mail the card if he wanted further information about any of the listed occupations. On the obverse side of the post card (pre-stamped) was the name and office address of the principal investigator.

Cards postmarked before the start of the post-treatment session were used as behavioral evidence of occupational information-seeking. All cards, whether received on time or not, received the information requested, but late cards were not included in the data analysis.

Library Lists. In each school librarians maintained lists of students requesting occupational information or materials during the seven days after the treatment session. Students who browsed through the vocational library could not be listed, however, unless they asked for materials from a librarian or attendant.

Counselor Lists. The counseling offices for the two high schools recorded all students requesting appointments or meeting with their counselors for vocational purposes. Again, these lists were maintained only for the period between the treatment and post-treatment sessions.

CHAPTER III

RESULTS AND DISCUSSION

This section is organized in the following manner. First, the analyses of the vocational problem-solving treatment versus the non-problem-solving control are presented and discussed. Following are the problem-solving treatment versus the occupational information control analyses. Finally, an overall discussion and summary of the sets of analyses is presented. The analyses of the problem-solving treatment compared to the career information and irrelevant controls do not appear in this report. Priorities of time and finances precluded their analysis and study at present. Preliminary inspection of the data pertaining to these two controls versus the problem-solving treatment suggests that little additional information would be gained beyond that developed from the reported analyses.

Problem-Solving Treatment Vs. Non-Problem-Solving Control

A 2x2x3x2 analysis of variance was used in the reduction of this data. The four variables and the levels within each in this analysis are:

1. Schools: two schools representing two socio-economic levels. The reference to the middle socio-economic school will be MID SES and that for the lower socio-economic school will be LOW SES.

2. Sexes: both sexes will be represented in the analyses by the terms BOYS and GIRLS.

3. Treatments: two treatments enter these analyses. The problem-solving treatment will be indicated by PROB SOLV and the non-problem-solving control by NON PROB SOLV.

4. Occupations: three occupations, medical laboratory technology, X-Ray technology, and sales will be indicated by MED LAB, X-RAY, and SALES, respectively.

Analysis of the Responses on the Student Reaction Sheet

The significant main effects and interactions from the analysis of the responses to the items on the Student Reaction Sheet for the problem-solving and non-problem-solving treatments appear in Table II; cell means are given in Tables III and IV A-D. Cell means and replications per cell appear in the Appendix B-1. Following these summary tables are item-by-item analyses of the cells yielding significant differences. It is understood that in the 8 x 15 matrix composing Table II that one or two significant differences of $p \leq .01$ and five or six of $p \leq .05$ will occur by chance. Nevertheless, each of the significant main effects and interactions will be discussed.

The Student Reaction Sheet was scored according to the item alternative circled or marked by the respondent. Item response alternatives were assigned values in such a way that responses most favoring the research hypotheses were scored highest and those countering or least favoring the hypotheses were scored lowest. This scoring pattern was applied to all criterion measures.

TABLE II

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL (OCCUPATIONS POOLED)

	Student Reaction Sheet Items							
	1	2	3	4	5	6	7	8
SES	.01		.05	.05			.01	.05
SEX	.01		.05				.05	
TREATMENT	.01				.05	.01	.05	
OCCUPATION	.01		.01			.05		
SESxSEX								
SESxTMT								
SESxOCC	.05				.05			
SEXxTMT								
SEXxOCC			.05					
TMTxOCC								
SESxSEXxTMT								
SESxSEXxOCC								
SESxTMTxOCC								
SEXxTMTxOCC	.05							
SESxSEXxTMTxOCC	.05		.05					

TABLE III

MEAN SCORES FOR SIGNIFICANT MAIN EFFECTS

	Student Reaction Sheet Items						
	1	3	4	5	6	7	8
MED SES	3.33	3.89	1.64			3.76	3.62
LOW SES	3.75	3.74	1.78			4.11	3.84
BOYS	3.24	3.76				3.73	
GIRLS	3.18	3.17				3.01	
PROB SOLV	3.84			3.55	4.06	4.04	
NON PROB SOLV	3.20			3.66	3.69	3.80	
MED LAB	3.83	4.00			4.03		
X RAY	3.49	3.92			3.90		
SALES	3.22	3.54			3.69		

TABLE IV

CELL MEANS FOR SIGNIFICANT INTERACTIONS
STUDENT REACTION SHEET

TABLE IV A

		Item No.	
SES	OCCUPATION	1	5
MID	MED LAB	3.74	3.32
	X RAY	3.00	3.43
	SALES	3.14	3.42
LOW	MED LAB	3.95	3.64
	X RAY	4.08	3.56
	SALES	3.24	3.42

TABLE IV B

		Item No.
SEX	OCCUPATION	3
BOYS	MED LAB	4.08
	X RAY	3.69
	SALES	3.44
GIRLS	MED LAB	3.93
	X RAY	4.11
	SALES	3.06

TABLE IV C

			Item No.
SEX	TREATMENT	OCCUPATION	1
BOYS	PROB SOLV	MED LAB	4.24
		X RAY	3.30
		SALES	3.16
	NON PROB SOLV	MED LAB	3.10
		X RAY	2.73
		SALES	2.94
GIRLS	PROB SOLV	MED LAB	4.25
		X RAY	4.26
		SALES	3.57
	NON PROB SOLV	MED LAB	3.74
		X RAY	3.55
		SALES	3.06

TABLE IV (Cont.)

CELL MEANS FOR SIGNIFICANT INTERACTIONS
STUDENT REACTION SHEET
TABLE IV D

				ITEM NO.	
SES	SEX	TREATMENT	OCCUPATION	1	3
MID	BOYS	PROB SOLV	MED LAB	4.07	4.07
			X RAY	2.84	4.00
			SALES	3.15	3.69
		NON PROB SOLV	MED LAB	3.07	4.21
			X RAY	2.00	3.46
			SALES	3.00	3.38
	GIRLS	PROB SOLV	MED LAB	4.47	3.94
			X RAY	3.75	4.16
			SALES	3.41	3.91
		NON PROB SOLV	MED LAB	3.26	4.13
			X RAY	3.57	4.14
			SALES	3.28	3.64
LOW	BOYS	PROB SOLV	MED LAB	4.57	4.28
			X RAY	3.90	3.70
			SALES	3.20	3.00
		NON PROB SOLV	MED LAB	3.15	3.84
			X RAY	4.12	3.62
			SALES	2.83	3.40
	GIRLS	PROB SOLV	MED LAB	4.00	3.56
			X RAY	4.71	4.07
			SALES	3.68	3.57
		NON PROB SOLV	MED LAB	4.55	4.22
			X RAY	3.53	4.07
			SALES	2.87	3.37

1. To what extent would you like to work on another booklet written in the same manner as the one you worked on one week ago?

   5. I would like to work on a similar booklet very much.
   4. I would like to work on a similar booklet a little.
   3. It doesn't make much difference to me.
   2. I don't think I would like to work on a similar booklet.
   1. I definitely do not want to work on a similar booklet.

For Item 1, all main effects were significant at the $p \leq .01$ level.

The trends in the means were:

LOW SES > MID SES
BOYS > GIRLS
PROB SOLV > NON PROB SOLV
MED LAB > X-RAY > SALES

In addition to the significant main effects, three interactions were also significant. The SES x OCCUPATION interaction indicated that the X-RAY booklets were least liked in the MID SES school but best liked in the LOW SES school. The SEX x TREATMENT x OCCUPATION interaction indicated that, though PROB SOLV was uniformly liked better than NON PROB SOLV, the biggest discrepancy between the two treatments was in the MED LAB occupation for BOYS and in the X-RAY occupation for GIRLS. In the four-way interaction both BOYS and GIRLS in the MID SES school and the BOYS in the LOW SES school distinctly preferred the PROB SOLV MED LAB treatment, but GIRLS in the LOW SES school tended to like the NON PROB SOLV MED LAB treatment a little better. In the X-RAY occupation, however, the largest preference for PROB SOLV was found among the LOW SES GIRLS while LOW SES BOYS slightly favored the NON PROB SOLV treatment.

2. To what extent would you like to explore a number of different occupations?

   4. I would like to explore many different occupations.

   3. I've narrowed my choice to about three occupations.

   2. I've narrowed my choice to two occupations.

   1. There's only one occupation that I want to find out more about.

No significant main effects or interactions were found on Item 2.

3. Do you now know better exactly what people in a certain occupation do?

   5. Yes, I know much better what people do in a certain occupation.

   4. Yes, a little better.

   3. About the same.

   2. No, a little less.

   1. No, I know much less about what people do in a certain occupation.

Three main effects were significant for this item; SES and SEX were significant at $p \leq .05$ and OCCUPATION at $p \leq .01$.

MID SES > LOW SES
BOYS > GIRLS

MED LAB > X-RAY > SALES

Two interactions were also significant: SEX x OCCUPATION and SES x SEX x TREATMENT x OCCUPATION. The former interaction indicated that BOYS reported learning more than GIRLS in MED LAB and SALES occupations, but the difference was in the opposite direction for the X-RAY occupation. The latter interaction revealed for the MED LAB occupation that only the LOW SES BOYS reported better knowledge as a result of the PROB SOLV treatment while all other subgroups reported slightly more knowledge from the NON PROB SOLV treatment. The discrepancies in both other occupations tended to favor PROB SOLV except for the opposite trend among LOW SES BOYS in the SALES occupation.

4. Did you find that you had to change some of your ideas about what people in a particular occupation do?
    3. Yes, very much changed some of my ideas?
    2. Yes, a little.
    1. No, not at all.

SES was a significant main effect appearing in the responses to Item 4.

LOW SES > MID SES $(p \leq .05)$

5. Are you now more certain than before that you could be successful in an occupation?
    5. Yes, much more certain that I could be successful.
    4. Yes, a little more.
    3. About the same.
    2. No, a little less.
    1. No, much less certain now that I could be successful.

The TREATMENT effect was significant in this item as well as one interaction, SES x OCCUPATION.

NON PROB SOLV > PROB SOLV)$p \leq .05$)

In the LOW SES school MED LAB and X-RAY occupations were more effective in promoting higher estimates of job success than in the MID SES school. SALES was equally effective in both schools.

6. Do you now know better what it would feel like to work at a particular occupation?
    5. Yes, much better idea of how it would feel to work at a particular job.
    4. Yes, a little better.
    3. About the same.
    2. No, a little less.
    1. No, much less certain than before how it would feel to work at a particular job.

The main effect for TREATMENT was significant for Item 6. The effect due to OCCUPATION was also significant.

PROB SOLV > NON PROB SOLV $(p \leq .01)$

MED LAB > X RAY > SALES $(p \leq .05)$

7. Do you now know better exactly what would be expected of you on a job?

   5. Yes, much better idea now of what would be expected of me.
   4. Yes, a little better.
   3. About the same.
   2. No, a little less certain.
   1. No, much less certain than before of what would be expected of me.

Three main effects were significant in Item 7: SES at $p \leq .01$, and SEX and TREATMENT both at $9 \leq .05$.

LOW SES > MID SES
BOYS > GIRLS
PROB SOLV > NON PROB SOLV

8. Do you feel that you know better now what you yourself would enjoy and be good at in an occupation?

   5. Yes, much better idea of what I would enjoy and be good at.
   4. Yes, a little better.
   3. About the same.
   2. No, a little less well.
   1. No, much poorer idea of what I would enjoy and be good at.

One main effect, SES, was significant for this item.

LOW SES > MID SES ($p \leq .05$)

Summary of Results for the Student Reaction Sheet

The number of significant main effects far exceeded that expected by chance alone. SES and treatment had the greatest effect on the reponses to the items. The lower SES group answered the questions more positively than the middle SES group. Similarly, the problem-solving treatment produced more high favorable responses than the non-problem-solving treatment. In each of the foregoing trends in main effects there was one reversal.

Sex and occupation effects each significantly influenced responses to these items. Boys consistently gave higher positive answers than girls and the medical laboratory technologist kit consistently produced the highest mean responses followed by the X-Ray condition, then Sales.

The principal items involved in the main effects were Items 1, 3 and 7: four significant main effects in Item 1 (all at $p \leq .01$) and three in each of the other items. Item 1 concerned the student's desire to work with another booklet of similar construction as the one he worked in during the treatment period. Items 3 and 7 concerned the student's knowledge of job content in the area for which he received a booklet.

The trend in the treatment effect in Item 5 is important to comment upon. The item concerns the student's estimate of successfully working at the occupation with which he worked in the treatment session. The non-problem solving treatment produced more positive responses than the problem-solving treatment. Possibly, having to produce solutions to the occupational problems reduced the degree of certainty the students held about their success at these jobs. Since the problem-solving treatment produced better knowledge of "what would be expected of you on the job" (Item 7), better knowledge of "what it would feel like to work at a particular occupation" (Item 6), and more desire to work on a similar booklet, subjects' lack of assurance of their own success may represent a realistic appraisal of their chances and may not be undesirable.

The number of significant interactions was close to chance occurrence. One consistency appeared, however, among all of the interactions. The medical laboratory technologist and X-Ray occupations, especially with the lower SES group, produced the highest mean responses.

Analysis of the Responses on the Vocational Planning Questionnaire

Cell means and the number of replications per cell appear in the Appendix B-2. Significant main effects and interactions are summarized in Table V, VI, and VII A-H.

1. During the past seven days how much time have you spent talking about your possible future occupations?

(0) ☐ None

(1) ☐ 1-10 minutes

(2) ☐ 10-20 minutes

(3) ☐ 20-30 minutes

(4) ☐ 30-40 minutes

(5) ☐ 40-50 minutes

(6) ☐ 50-60 minutes

(7) ☐ More than one hour

Item 1 was scored according to the values in parentheses to the left of the response alternative.

No main effects were significant for Item 1 There was, however, one significant interaction, SES x TREATMENT. PROB SOLV brought about more discussion about future occupations in the LOW SES school than NON PROB SOLV. There was a slight reversed trend in the MID SES school.

1b. If you did talk with some person about possible occupations, check who they were below and give their names:

☐ My friend(s): ________________________________

☐ My parent(s): ________________________________

☐ My relative(s): ______________________________

☐ My teacher(s): _______________________________

☐ My counselor(s): _____________________________

☐ Other(s): ____________________________________

Each response alternative was scored dichotomously (1,); any response was scored (1), no response was (0).

TABLE V

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL (OCCUPATIONS POOLED)

	Vocational Planning Questionnaire Items											
	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
SES		.01		.05		.01		.05				
SEX		.01	.05					.05				
TREATMENT									.01	.05		
OCCUPATION		.05			.05							
SESxSEX						.05						
SESxTMT	.05		.05						.01			
SESxOCC				.05								
SEXxTMT												
SEXxOCC									.05		.05	
TMTxOCC			.05					.05				
SESxSEXxTMT											.01	
SESxSEXxOCC				.05		.05						
SESxTMTxOCC							.05					
SEXxTMTxOCC												
SESxSEXxTMTxOCC												

TABLE VI

MEAN SCORES FOR SIGNIFICANT MAIN EFFECTS

	Vocational Planning Questionnaire Items							
	1B-1	1B-2	1B-3	1B-4	1B-5	2	3	3B
MID SES	.42		.11		.15	1.18		
LOW SES	.60		.23		.04	1.35		
BOYS	.34	.51				1.17		
GIRLS	.65	.67				1.32		
PROB SOLV							1.07	.14
NON PROB SOLV							1.01	.01
MED LAB	.49			.05				
X RAY	.59			.05				
SALES	.42			.15				

CELL MEANS FOR SIGNIFICANT INTERACTIONS
VOCATIONAL PLANNING QUESTIONNAIRE

TABLE VII A

		Item No.
SES	SEX	1B-5
MID	BOYS	.22
	GIRLS	.08
LOW	BOYS	.02
	GIRLS	.04

TABLE VII B

		Item No.		
SES	TREATMENT	1	1B-2	3
MID	PROB SOLV	3.10	.54	1.02
	NON PROB SOLV	3.20	.60	1.02
LOW	PROB SOLV	4.16	.67	1.11
	NON PROB SOLV	3.24	.50	1.00

TABLE VII C

		Item No.
SES	OCCUPATION	1B-3
MID	MED LAB	.02
	X RAY	.16
	SALES	.17
LOW	MED LAB	.29
	X RAY	.18
	SALES	.22

TABLE VII D

		Item No.	
SEX	OCCUPATION	3	4
BOYS	MED LAB	1.06	1.31
	X RAY	1.02	1.09
	SALES	1.00	1.32
GIRLS	MED LAB	1.02	1.28
	X RAY	1.09	1.31
	SALES	1.05	1.16

TABLE VII E

		Item No.	
TREATMENT	OCCUPATION	1B-2	2
PROB SOLV	MED LAB	.49	1.26
	X RAY	.65	1.36
	SALES	.67	1.33
NON PROB SOLV	MED LAB	.62	1.21
	X RAY	.56	1.24
	SALES	.48	1.16

CELL MEANS FOR SIGNIFICANT INTERACTIONS
VOCATIONAL PLANNING QUESTIONNAIRE

TABLE VII F

			Item No.
SES	SEX	TREATMENT	4
MID	BOYS	PROB SOLV	1.10
		NON PROB SOLV	1.19
	GIRLS	PROB SOLV	1.32
		NON PROB SOLV	1.18
LOW	BOYS	PROB SOLV	1.43
		NON PROB SOLV	1.18
	GIRLS	PROB SOLV	1.22
		NON PROB SOLV	1.28

TABLE VII G

			Item No.	
SES	SEX	OCCUPATION	1B-3	1B-5
MID	BOYS	MED LAB	.04	.36
		X RAY	.10	.10
		SALES	.17	.21
	GIRLS	MED LAB	0	.03
		X RAY	.23	.15
		SALES	.17	.08
LOW	BOYS	MED LAB	.20	0
		X RAY	.31	.06
		SALES	.09	0
	GIRLS	MED LAB	.36	.08
		X RAY	.11	.04
		SALES	.26	.03

TABLE VII H

			ITEM NO.
SES	TREATMENT	OCCUPATION	1B-6
MID	PROB SOLV	MED LAB	.14
		X RAY	.02
		SALES	.08
	NON PROB SOLV	MED LAB	.03
		X RAY	.13
		SALES	0
LOW	PROB SOLV	MED LAB	.08
		X RAY	.04
		SALES	.08
	NON PROB SOLV	MED LAB	.09
		X RAY	.09
		SALES	.04

1b (1-Friends). Three main effects were significant: SES, SEX and OCCUPATION.

LOW SES > MID SES ($p \leq .01$)
GIRLS > BOYS ($p \leq .01$)
X RAY > MED LAB > SALES ($p \leq .05$)

1b(2-Parents). For this item one main effect was significant: SEX at $p \leq .05$.

GIRLS > BOYS

Two first-order interactions were also significant. They were SES x TREATMENT and TREATMENT x OCCUPATION. In the first interaction PROB SOLV produced more discussion with parents among LOW SES students than MID SES ones: NON PROB SOLV was slightly more effective among the MID SES group. In the second interaction the PROB SOLV condition in X-RAY and SALES produced more discussion than NON PROB SOLV in these occupations, but NON PROB SOLV in MED LAB was the more effective treatment.

1b (3-Relatives). The SES effect was significant for Item 1B-3 at the $p \leq .05$ level

LOW SES > MID SES

Significant interactions, SES x OCCUPATION and SES x SEX x OCCUPATION, indicated that all occupations in the LOW SES group produced more discussion with relatives than in the MID SES group. LOW SES GIRLS were particularly influenced by the MED LAB and SALES occupations, but MID SES GIRLS and LOW SES BOYS by X-RAY.

1b (4-Teacher). One main effect was significant: OCCUPATION

SALES > MED LAB, X-RAY ($p \leq .05$)

1b (5-Counselor). SES was a significant ($p \leq .01$) main effect for this item, as well as two interactions.

MID SES > LOW SES

The significant interactions were SES x SEX and SES x SEX x OCCUPATION. The MID SES group talked more with their counselors than the LOW SES group: BOYS much more so than GIRLS. This same trend in results appeared in the second interaction: the occupations of MED LAB and SALES being more effective among MID SES BOYS, but X-RAY being more effective with MID SES GIRLS.

1b (6-Other). Only one interaction, SES x TREATMENT x OCCUPATION, was significant. Although PROB SOLV and NON PROB SOLV were approximately equally effective in producing discussion with "others" in the LOW SES group for the three occupations, PROB SOLV in MED LAB and NON PROB SOLV in X-RAY were markedly more effective at the MID SES school.

2. Did you mail the post card requesting information about occupations?

☐ Yes. ☐ No.

For all "Yes-No" items, "Yes" was scored as (2), "No" as (1).

Two main effects appear from the responses to this item: SES and SEX.

LOW SES > MID SES ($p \leq .05$)
GIRLS > BOYS ($p \leq .05$)

One significant interaction, TREATMENT x OCCUPATION, also appeared. For all occupations the PROB SOLV treatment produced more positive responses than NON PROB SOLV. However, PROB SOLV generated twice as many returns in SALES, 50 percent more in X-RAY, but only about 25 percent in MED LAB.

3. During the past seven days have you written anywhere else for occupational information?

☐ Yes. ☐ No.

For this item one significant main effect occurred.

PROB SOLV $>$ NON PROB SOLV ($p \leq .01$)

Also in two significant interactions, SES x TREATMENT and SEX x OCCUPATION, trends indicated that PROB SOLV in the LOW SES group produced more written inquiries for occupational information than NON PROB SOLV in the LOW SES group or either treatment in the MID SES group. The second interaction showed that BOYS receiving the MED LAB kits wrote for information more than GIRLS receiving that kit. In contrast, GIRLS working in the X-RAY and SALES materials made more written inquiries than BOYS in X-RAY or SALES.

3b. If you answered "Yes," tell what you requested (the kind of information and/or whom you wrote to):

If any response was given, a score of (1) was awarded. No response was (0). TREATMENT was the only significant main effect for Item 3b.

PROB SOLV $>$ NON PROB SOLV ($p \leq .05$)

(This item was scored dichotomously on whether or not an S wrote in at least one specific item.)

4. During the past seven days have you read any books or pamphlets about any jobs or about choosing an occupation?

☐ Yes. ☐ No.

No significant main effects occurred for Item 4, but two interactions, SEX x OCCUPATION and SES x SEX x TREATMENT, were significant. The former interaction showed that BOYS working with MED LAB and SALES read more occupational materials than did GIRLS receiving those kits. GIRLS receiving X-RAY kits, however, read more widely than BOYS with X-RAY kits. Also PROB SOLV promoted more reading for information among MID SES GIRLS and LOW SES BOYS than among MID SES BOYS or LOW SES GIRLS. NON PROB SOLV was slightly more effective among the MID SES BOYS and LOW SES GIRLS.

5. Realistically, when it comes to choosing a job I will (Check what you really will do.)

(1) ☐ wait until I'm about ready to start a job and then take the best job I can find.

(2) ☐ find out soon what the opportunities are for me in various occupations.

The first response alternative was scored as (1), the last as (2). No significant main effects or interactions occurred for this item.

Summary of Results for Responses to the Vocational Planning Questionnaire

SES level and sex were the dominant main effects evident in responses to the questionnaire. The lower SES group responded more than the middle SES group in the positively-keyed direction, that is, they talked with more people and requested information more than the MID SES group. Similarly, girls consistently responded in this direction more than boys.

For two items in which treatment effects were significant, problem-solving conditions produced more written inquiries for information than non-problem solving.

The number of significant interactions approximated that anticipated by chance. The only consistent trend appearing in the interactions suggested that the problem-solving treatment among lower SES subjects produced the highest positive responses.

Significant main effects and interactions were clustered about no particular item or items, but rather scattered throughout the matrix.

Analysis of the Responses on the High School Vocational Survey

This presentation is divided into three parts: (1) directional changes in interest ratings, (2) absolute changes in interest ratings and (3) absolute changes in certainty ratings when interest ratings are unchanged from pre- to post-test.

Scores on the High School Vocational Survey were assigned separately to interest ratings and certainty ratings. Interest ratings were scored one to five: the value of five being assigned to the highest interest category, and decreasing values assigned to each of the lower interest categories. The value of one was given to the lowest interest category. Certainty was scored in the same manner as interest: five indicating the most certainty and one the least.

Directional Changes in Interest Ratings According to Occupation

Significant main effects and interactions are summarized in Tables VIII, IX and XA-C. Cell means and replications per cell are given in Appendix B-3.

I. Ratings by Ss receiving MED LAB

Ratings for three items displayed significant main effects or interactions:

Item # 4. X-ray technician
# 8. Medical laboratory technologist
#15. Dental assistant

TABLE VIII

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR MEAN DIRECTIONAL CHANGE IN INTEREST RATINGS FOR EACH OCCUPATION: PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

	High School Vocational Survey Items														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MED LAB															
SES															
SEX								.01							
TREATMENT															
SESxSEX															.05
SESxTMT															
SEXxTMT															
SESxSEXxTMT				.01											
X-RAY															
SES	.01														
SEX															
TREATMENT															
SESxSEX			.01												
SESxTMT															
SEXxTMT						.01	.01				.05				
SESxSEXxTMT															
SALES															
SES		.05													
SEX															
TREATMENT															
SESxSEX															
SESxTMT															
SEXxTMT															
SESxSEXxTMT															

TABLE IX

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS HIGH SCHOOL VOCATIONAL SURVEY ITEMS

	MED LAB Item No. 8	X-RAY Item No. 1	SALES Item No. 2
MID SES		.13	.16
LOW SES		-.37	-.10
BOYS	-.02		
GIRLS	.56		

TABLE X

CELL MEANS FOR SIGNIFICANT INTERACTIONS HIGH SCHOOL VOCATIONAL SURVEY ITEMS

TABLE X A

SES	SEX	MED LAB Item No. 15	X-RAY Item No. 3
MID	BOYS	.14	-.14
	GIRLS	-.18	.26
LOW	BOYS	-.29	.37
	GIRLS	.27	-.27

TABLE X B

		X-RAY Item No.		
SEX	TREATMENT	6	7	11
BOYS	PROB SOLV	-.05	.04	.22
	NON PROB SOLV	.23	.50	-.18
GIRLS	PROB SOLV	-.29	-.04	-.17
	NON PROB SOLV	-.12	0	.04

TABLE X C

SES	SEX	TREATMENT	MED LAB Item No. 4.
MID	BOYS	PROB SOLV	.53
		NON PROB SOLV	-.28
	GIRLS	PROB SOLV	.13
		NON PROB SOLV	.15
LOW	BOYS	PROB SOLV	-.42
		NON PROB SOLV	.50
	GIRLS	PROB SOLV	.53
		NON PROB SOLV	-.11

X-ray Technician. One interaction was significant for this item: SES x SEX x TREATMENT. The PROB SOLV treatment among LOW SES GIRLS and MID SES BOYS and GIRLS increased interest in the job of an X-ray technician but decreased interest for LOW SES BOYS. NON PROB SOLV decreased interest among MID SES BOYS and LOW SES GIRLS, but increased interest among MID SES GIRLS and LOW SES BOYS.

Medical Laboratory Technologist. SEX was a significant main effect at $p \leq .01$.

GIRLS > BOYS

Dental Assistant. SES x SEX was a significant interaction. It indicated increased interest for LOW SES GIRLS and decreased interest for LOW SES BOYS. These trends were reversed for MID SES sexes.

II. Ratings by Ss receiving X-RAY

Five items had significant changes:

Item # 1. Scientist
# 3. Accountant
# 6. Nurse
# 7. Writer of advertising
#11. Doctor

Scientist. Only this item had a significant main effect, SES.

MID SES > LOW SES ($p \leq .01$)

Accountant. SES x SEX was a significant interaction for this item. LOW SES BOYS and MID SES GIRLS increased interest, but LOW SES GIRLS and MID SES BOYS decreased interest.

Nurse. For this item SEX x TREATMENT was significant. PROB SOLV decreased rated interest for both sexes. NON PROB SOLV, however increased interest among BOYS, but decreased interest among GIRLS.

Writer of Advertising. In another SEX x TREATMENT interaction, NON PROB SOLV was followed by increased interest among BOYS but by virtually no change in the three other groups.

Doctor. In a third SEX x TREATMENT interaction PROB SOLV for BOYS produced increased interest in becoming a medical doctor in contrast to the decreased interest for BOYS who received NON PROB SOLV. This trend was reversed for GIRLS.

III. Ratings by Ss receiving SALES

One item, #2, had a significant main effect. None had significant interactions.

Bank Teller. The significant main effect was SES.

MID SES > LOW SES ($p \leq .05$)

Summary of Results for Directional Change in Interest Ratings.

The number of significant main effects and interactions could be attributed to chance occurrences. No trends appeared that were consistent enough to warrant interpretation, nor were significant findings centered about certain items.

Items for which there were changes in ratings, however, were pertinent to fields related to the occupations represented by the kits. The only exceptions appearing in the X-ray kit analysis in which changes in responses to "accountant" and "writer of advertising" appeared.

Absolute Changes in Interest Ratings for Each Occupation

Significant main effects and interactions are summarized in Tables XI, XII and XIIIA-C. Cell means and replications per cell are

TABLE XI

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR MEAN ABSOLUTE CHANGE IN INTEREST RATINGS FOR EACH OCCUPATION: PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

	High School Vocational Survey Items														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MED LAB															
SES	.05														.05
SEX						.01									
TREATMENT															
SESxSEX															
SESxTMT															
SEXxTMT															
SESxSEXxTMT														.05	
X-RAY															
SES															
SEX	.05					.05									
TREATMENT															
SESxSEX															
SESxTMT		.05	.05												
SEXxTMT					.05			.05							
SESxSEXxTMT			.05												
SALES															
SES			.05												
SEX															
TREATMENT					.05					.05					
SESxSEX															
SESxTMT															
SEXxTMT										.05					
SESxSEXxTMT										.05					

TABLE XII

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS HIGH SCHOOL VOCATIONAL SURVEY ITEMS

	MED LAB Item No.			X-RAY Item No.			SALES Item No.	
	1	6	15	1	6	3	5	10
MID SES	.67		.38			.24		
LOW SES	.30		.79			.54		
BOYS		.13		.27	.36			
GIRLS		.46		.56	.54			
PROB SOLV							.38	.32
NON PROB SOLV							.20	.57

TABLE XIII

CELL MEANS FOR SIGNIFICANT INTERACTIONS HIGH SCHOOL VOCATIONAL SURVEY ITEMS

TABLE XIII A

SES	TREATMENT	X-RAY Item No. 2	X-RAY Item No. 3
MID	PROB SOLV	.32	.40
	NON PROB SOLV	.65	.59
LOW	PROB SOLV	.66	.85
	NON PROB SOLV	.47	.35

TABLE XIII B

SEX	TREATMENT	X-RAY Item No. 5	X-RAY Item No. 8	SALES Item No. 10
BOYS	PROB SOLV	.59	0	.11
	NON PROB SOLV	.31	.76	.68
GIRLS	PROB SOLV	.33	.71	.46
	NON PROB SOLV	.62	.50	.49

TABLE XIII C

SES	SEX	TREATMENT	MED LAB Item No. 14	X-RAY Item No. 3	SALES Item No. 10
MID	BOYS	PROB SOLV	.76	.53	.07
		NON PROB SOLV	.21	.20	.46
	GIRLS	PROB SOLV	.46	.25	.27
		NON PROB SOLV	.30	1.00	.76
LOW	BOYS	PROB SOLV	.28	.66	.20
		NON PROB SOLV	1.00	.28	1.16
	GIRLS	PROB SOLV	.61	1.00	.60
		NON PROB SOLV	.22	.40	.23

given in Appendix B-4. The dependent variable here is the amount of change in interest from pre- to post-treatment, regardless of its direction.

I. Ratings by S̲s receiving MED LAB

Three items showed significant main effects and one a significant interaction.

Item # 1. Scientist
# 6. Nurse
#14. Hospital orderly
#15. Dental assistant

Scientist. One main effect, SES, was significant ($p \leq .05$).

MID SES > LOW SES

Nurse. SEX was a significant main effect for this item.

GIRLS > BOYS ($p \leq .01$)

Hospital Orderly. The interaction of SES x SEX x TREATMENT showed that PROB SOLV resulted in more change among MID SES BOYS and GIRLS and with LOW SES GIRLS. With BOYS of the LOW SES group, however, the NON PROB SOLV treatment produced more change.

Dental Assistant. The main effect significant here was SES.

LOW SES > MID SES ($p \leq .05$)

II. Ratings by S̲s receiving X-RAY

The items having significant main effects or interactions were:

Item #1. Scientist
#2. Bank teller
#3. Accountant
#5. Insurance agent
#6. Nurse
#8. Medical laboratory technologist

Scientist. A main effect, SEX, showed:

GIRLS > BOYS ($p \leq .05$)

Bank Teller. An interaction of SES x TREATMENT indicated that PROB SOLV in the LOW SES group and NON PROB SOLV in the MID SES group produced larger absolute rating changes than PROB SOLV in the MID SES group and NON PROB SOLV in the LOW SES group.

Accountant. A SES x TREATMENT interaction was also significant for this item. The trends were identical to those described for "bank teller" above. A second interaction, SES x SEX x TREATMENT showed PROB SOLV producing higher rating changes within both sexes of the LOW SES group and among MID SES BOYS. NON PROB SOLV, however, produced higher changes with GIRLS at the MID SES school.

Insurance Agent. The significant interaction here was SEX x TREATMENT. PROB SOLV for BOYS and NON PROB SOLV for GIRLS produced more changes than the reversed conditions.

Nurse. One main effect was significant for ratings of "nurse": SEX.

GIRLS > BOYS ($p \leq .05$)

Medical Laboratory Technologist. The SEX x TREATMENT interaction was significant. PROB SOLV for GIRLS and NON PROB SOLV for BOYS produced rating changes greater than PROB SOLV for BOYS (no change) or NON PROB SOLV among GIRLS.

III. Ratings by Ss raceiving SALES

Item # 3. Accountant
# 5. Insurance agent
#10. Sales manager

Accountant. SES was a significant main effect at $p \leq .05$.

LOW SES > MID SES

Insurance Agent. One main effect, TREATMENT, was significant.

PROB SOLV > NON PROB SOLV ($p \leq .05$)

Sales Manager. TREATMENT was also significant for this item at the $p \leq .05$ level.

NON PROB SOLV > PROB SOLV

Also, two interactions were significant: SEX x TREATMENT and SES x SEX x TREATMENT. NON PROB SOLV produced more interest changes for both sexes than PROB SOLV, but by far the greater difference occurred with BOYS. The second interaction modifies the first by indicating that only among GIRLS from the LOW SES school did PROB SOLV produce more interest changes than NON PROB SOLV.

Summary of Results for Absolute Changes in Interest Ratings.

Again, the number of significant main effects and interactions is that expected by chance. No consistent trends appear in the directions of significant differences.

In the Medical Laboratory Technologist and Sales occupations the items showing changes in ratings were relevant to those occupations, but this same pattern did not hold for the X-ray occupation.

Absolute Changes in Certainty Ratings When Interest Ratings Remained Unchanged

Significant main effects and interactions are summarized in Tables XIV, XV, and XVIA-D. Appendix B-5 contains cell means and number of replications per cell.

Items on the High School Vocational Survey showing certainty changes when interest ratings between pre- and post-tests were unchanged

TABLE XIV

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR ABSOLUTE CHANGE IN CERTAINTY RATINGS WHEN INTEREST RATINGS REMAINED UNCHANGED FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

	High School Vocational Survey Items														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SES						.05						.05	.05		
SEX											.01	.05			
TREATMENT													.05		
OCCUPATION			.05			.05									
SESxSEX															
SESxTMT															
SESxOCC															
SEXxTMT															
SEXxOCC															.05
TMTxOCC															
SESxSEXxOCC								.01						.05	
SESxTMTxOCC								.01							
SEXxTMTxOCC					.01			.01				.05			
SESxSEXxTMTxOCC					.05										

TABLE XV

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS HIGH SCHOOL VOCATIONAL SURVEY ITEMS

	Item No.				
	3	6	11	12	13
MID SES		.32		.49	.45
LOW SES		.65		.76	.64
BOYS			.75	.74	
GIRLS			.41	.52	
PROB SOLV					.36
NON PROB SOLV					.70
MED LAB	.75	.55			
X RAY	.40	.53			
SALES	.51	.23			

TABLE XVI

CELL MEANS FOR SIGNIFICANT INTERACTIONS HIGH SCHOOL VOCATIONAL SURVEY ITEMS

TABLE XVI A

		Item No.
SEX	OCCUPATION	15
BOYS	MED LAB	.82
	X RAY	.40
	SALES	.30
GIRLS	MED LAB	.40
	X RAY	.66
	SALES	.60

TABLE XVI B

			Item No.	
SES	SEX	OCCUPATION	8	14
MID	BOYS	MED LAB	.41	.53
		X RAY	.50	.08
		SALES	.60	.75
	GIRLS	MED LAB	.61	.66
		X RAY	1.00	.46
		SALES	.07	.23
LOW	BOYS	MED LAB	1.00	1.50
		X RAY	1.00	.82
		SALES	.83	0
	GIRLS	MED LAB	.20	.15
		X RAY	.64	.50
		SALES	.84	.59

TABLE XVI (cont.)

TABLE XVI C

SES	TREATMENT	OCCUPATION	Item No. 8
MID	PROB SOLV	MED LAB	.16
		X RAY	.83
		SALES	.35
	NON PROB SOLV	MED LAB	.84
		X RAY	.66
		SALES	.33
LOW	PROB SOLV	MED LAB	1.00
		X RAY	1.00
		SALES	.62
	NON PROB SOLV	MED LAB	.38
		X RAY	.56
		SALES	1.08

TABLE XVI D

			Item No.		
SEX	TREATMENT	OCCUPATION	5	8	12
BOYS	PROB SOLV	MED LAB	.54	.71	.99
		X RAY	.99	1.00	1.17
		SALES	.25	.36	3.00
	NON PROB SOLV	MED LAB	.92	.64	1.15
		X RAY	.50	.33	3.00
		SALES	.53	.99	.71
GIRLS	PROB SOLV	MED LAB	.29	.27	4.00
		X RAY	.33	.82	.36
		SALES	.25	.56	.53
	NON PROB SOLV	MED LAB	.38	.58	.64
		X RAY	.91	.83	.75
		SALES	.57	.47	.40

TABLE XVI (cont.)

TABLE XVI C

SES	TREATMENT	OCCUPATION	Item No. 8
MID	PROB SOLV	MED LAB	.16
		X RAY	.83
		SALES	.35
	NON PROB SOLV	MED LAB	.84
		X RAY	.66
		SALES	.33
LOW	PROB SOLV	MED LAB	1.00
		X RAY	1.00
		SALES	.62
	NON PROB SOLV	MED LAB	.38
		X RAY	.56
		SALES	1.08

TABLE XVI D

SEX	TREATMENT	OCCUPATION	Item No. 5	8	12
BOYS	PROB SOLV	MED LAB	.54	.71	.99
		X RAY	.99	1.00	1.17
		SALES	.25	.36	3.00
	NON PROB SOLV	MED LAB	.92	.64	1.15
		X RAY	.50	.33	3.00
		SALES	.53	.99	.71
GIRLS	PROB SOLV	MED LAB	.29	.27	4.00
		X RAY	.33	.82	.36
		SALES	.25	.56	.53
	NON PROB SOLV	MED LAB	.38	.58	.64
		X RAY	.91	.83	.75
		SALES	.57	.47	.40

TABLE XVI (cont.)

TABLE XVI E

SES	SEX	TREATMENT	OCCUPATION	Item No. 5
MID	BOYS	PROB SOLV	MED LAB	.71
			X RAY	.57
			SALES	.27
		NON PROB SOLV	MED LAB	.87
			X RAY	.63
			SALES	.66
	GIRLS	PROB SOLV	MED LAB	.27
			X RAY	.36
			SALES	.16
		NON PROB SOLV	MED LAB	.55
			X RAY	.60
			SALES	.54
LOW	BOYS	PROB SOLV	MED LAB	.25
			X RAY	1.75
			SALES	0
		NON PROB SOLV	MED LAB	1.00
			X RAY	.20
			SALES	.33
	GIRLS	PROB SOLV	MED LAB	.33
			X RAY	.28
			SALES	.30
		NON PROB SOLV	MED LAB	0
			X RAY	1.16
			SALES	.60

were:

Item # 3. Accountant
# 5. Insurance agent
# 6. Nurse
# 8. Medical laboratory technologist
#11. Doctor
#12. Office manager
#13. Salesman/saleswoman
#14. Hospital orderly
#15. Dental assistant

Accountant. OCCUPATION was a significant main effect in certainty changes for this item.

MED LAB > SALES > X-RAY ($p \leq .05$)

Insurance Agent. A second and third order interaction were significant for Item #5. In the second order interaction, SEX x TREATMENT x OCCUPATION, the PROB SOLV treatment for X-RAY for both sexes resulted in higher changes in certainty ratings than MED LAB or SALES; NON PROB SOLV for X-RAY with GIRLS followed this trend also. In contrast, NON PROB SOLV for BOYS receiving MED LAB kits produced larger changes than either X-RAY or SALES. The third order interaction of SES x SEX x TREATMENT x OCCUPATION indicated that the PROB SOLV treatment influenced larger changes in certainty ratings among MID SES BOYS and LOW SES GIRLS receiving the MED LAB materials, and among MID SES GIRLS and LOW SES BOYS receiving X-RAY materials. The NON PROB SOLV treatment, however, appeared more effective in producing changes among MID SES and LOW SES BOYS receiving MED LAB kits, and MID and LOW SES GIRLS receiving X-RAY kits.

Nurse. Two main effects, SES and OCCUPATION, were significant.

LOW SES > MID SES
MED LAB > X-RAY > SALES

Medical Laboratory Technologist. Three interactions for this were significant at the .01 level. The SES x TREATMENT x OCCUPATION interaction indicated that PROB SOLV changed certainty ratings more than NON PROB SOLV in the MID SES school only with subjects who had taken non-relevant kits (X-RAY and SALES), but NON PROB SOLV produced more certainty changes for MID SES students taking the MED LAB kit. Among subjects at the low SES school, however, PROB SOLV exceeded NON PROB SOLV for both MED LAB and X-RAY kits but not the SALES kit. The SEX x TREATMENT x OCCUPATION interaction showed the largest differences between conditions to be among BOYS: the PROB SOLV X-RAY kit and the NON PROB SOLV SALES kit produced the greatest certainty changes toward the occupation of medical laboratory technician for BOYS.

Doctor. SEX was a significant main effect ($p \leq .01$).

BOYS > GIRLS

Office Manager. Both SEX and SES were significant here.

LOW SES > MID SES ($p \leq .05$)

BOYS > GIRLS ($p \leq .05$)

An interaction, SEX x TREATMENT x OCCUPATION, was also significant. The PROB SOLV treatment for BOYS in SALES and GIRLS in MED LAB occupations resulted in greater certainty changes than other occupations for these sexes. NON PROB SOLV in X-RAY produced consistently high means for both sexes relative to MED LAB and SALES.

Salesman/Saleswoman. Two main effects were significant at the $p \leq .05$ level: SES and TREATMENT.

LOW SES > MID SES
NON PROB SOLV > PROB SOLV

Hospital Orderly. SES x SEX x OCCUPATION was a significant interaction for this item. MED LAB produced a high mean change in certainty among GIRLS of the MID SES school and BOYS of the LOW SES school compared to small changes in SALES or X-RAY. SALES, on the other hand, was more effective than either MED LAB or X-RAY in producing changes among MID SES BOYS and LOW SES GIRLS.

Dental Assistant. SEX x OCCUPATION was a significant interaction: MED LAB resulted in more certainty change among BOYS than either X-RAY or SALES. X-RAY was more effective than MED LAB or SALES with GIRLS.

Summary of Results for Changes in Certainty of Interest Ratings.

The incidence of significant main effects and interactions were only slightly more than might be expected by chance if all the null hypotheses were true. One consistent trend in main effects indicated a greater change in certainty of interest ratings within the lower SES group. Some interactions, if confirmed by further research, suggest that the effects on certainty of problem solving occupational kits may depend on the sex and socio-economic background of the subjects.

Problem Solving Treatment Vs. Occupational Information Control

Again, as in the preceding section concerning the problem solving vs. non-problem solving data, a 2x2x3x2 analysis of variance was used. The variables of schools, sex and occupations are continued here. The only difference in the following data analyses and descriptions is in treatment variable; the two levels of the variable are problem solving (as before) and occupational information. Occupational information will be indicated by OCC INFO.

Analysis of the Responses on the Student Reaction Sheet

Tables XVII, XVIII and XIXA-D contain the means for significant main effects and interactions. Cell means and number of replications per cell appear in Appendix C-1.

1. To what extent would you like to work on another booklet written in the same manner as the one you worked on one week ago?

    5. I would like to work on a similar booklet very much.
    4. I would like to work on a similar booklet a little.
    3. It doesn't make much difference to me.
    2. I don't think I would like to work on a similar booklet.
    1. I definitely do not want to work on a similar booklet.

Two main effects and three interactions were significant for Item 1. The main effects were SES and TREATMENT, both at the $p \leq .01$ level

LOW SES > MID SES

PROB SOLV > OCC INFO

The significant interactions, TREATMENT x OCCUPATION, SES x OCCUPATION and SEX x TREATMENT x OCCUPATION, showed consistently elevated means for PROB SOLV over OCC INFO for all other conditions.

TABLE XVII

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL (OCCUPATIONS POOLED)

	Student Reaction Sheet Items							
	1	2	3	4	5	6	7	8
SES	.01			.01	.05	.05	.05	.01
SEX				.01			.01	
TREATMENT	.01					.01	.05	
OCCUPATION						.05		
SESxSEX								
SESxTMT								.01
SESxOCC								
SEXxTMT								
SEXxOCC								
TMTxOCC	.05							
SESxSEXxTMT								
SESxSEXxOCC								
SESxTMTxOCC	.05							.05
SEXxTMTxOCC	.05							
SESxSEXxTMTxOCC								

TABLE XVIII

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS

	Item No.(Student Reaction Sheet)					
	1	4	5	6	7	8
MID SES	3.09	1.59	3.37	3.79	3.85	3.63
LOW SES	3.76	1.81	3.60	4.00	4.08	3.96
BOYS		1.57			3.76	
GIRLS		1.69			3.62	
PROB SOLV	3.84			4.06	4.06	
OCC INFO	2.96			3.71	3.85	
MED LAB				3.94		
X RAY				4.01		
SALES				3.71		

TABLE XIX

CELL MEANS FOR SIGNIFICANT INTERACTIONS
STUDENT REACTION SHEET

TABLE XIX A

SES	TREATMENT	Item No. 8
MID	PROB SOLV	3.74
	OCC INFO	3.53
LOW	PROB SOLV	3.79
	OCC INFO	4.15

TABLE XIX B

TREATMENT	OCCUPATION	Item No. 1
PROB SOLV	MED LAB	4.25
	X RAY	3.82
	SALES	3.75
OCC INFO	MED LAB	2.88
	X RAY	3.21
	SALES	2.82

TABLE XIX C

SES	TREATMENT	OCCUPATION	Item No. 1	8
MID	PROB SOLV	MED LAB	4.30	3.80
		X RAY	3.28	3.84
		SALES	3.28	3.58
	OCC INFO	MED LAB	2.37	3.19
		X RAY	3.10	3.61
		SALES	2.28	3.74
LOW	PROB SOLV	MED LAB	4.18	3.69
		X RAY	4.37	3.92
		SALES	4.25	3.75
	OCC INFO	MED LAB	3.53	4.44
		X RAY	3.36	4.27
		SALES	3.54	3.83

TABLE XIX D

SEX	TREATMENT	OCCUPATION	Item No. 1
BOYS	PROB SOLV	MED LAB	4.25
		X RAY	3.31
		SALES	3.17
	OCC INFO	MED LAB	2.91
		X RAY	3.28
		SALES	2.79
GIRLS	PROB SOLV	MED LAB	4.25
		X RAY	4.27
		SALES	4.25
	OCC INFO	MED LAB	2.85
		X RAY	3.36
		SALES	3.54

Overall, the MED LAB materials produced the greatest differences between treatments; X-RAY, least. However, in the LOW SES school the differences were more nearly equal. For GIRLS the X-RAY materials produced the greatest differences in interest between treatments. All differences consistently favored the PROB SOLV kits over OCC INFO; only the magnitude of the differences varied.

2. To what extent would you like to explore a number of different occupations?

   4. I would like to explore many different occupations.
   3. I've narrowed my choice to about three occupations.
   2. I've narrowed my choice to two occupations.
   1. There's only one occupation that I want to find out more about.

No significant main effects or interactions were found.

3. Do you now know better exactly what people in a certain occupation do?

   5. Yes, I know much better what people do in a certain occupation.
   4. Yes, a little better.
   3. About the same.
   2. No, a little less.
   1. No, I know much less about what people do in a certain occupation.

No significant main effects or interactions were found.

4. Did you find that you had to change some of your ideas about what people in a particular occupation do?

   3. Yes, very much changed some of my ideas.
   2. Yes, a little.
   1. No, not at all.

Two main effects, SES and SEX, were significant ($p \leq .01$).

LOW SES > MID SES

GIRLS > BOYS

5. Are you now more certain than before that you could be successful in an occupation?

    5. Yes, much more certain that I could be successful.
    4. Yes, a little more.
    3. About the same.
    2. No, a little less.
    1. No, much less certain now that I could be successful.

For Item 5 one main effect, SES, was significant.

LOW SES > MID SES ($p \leq .05$)

6. Do you now know better what it would feel like to work at a particular occupation?

    5. Yes, much better idea of how it would feel to work at a particular job.
    4. Yes, a little better.
    3. About the same.
    2. No, a little less.
    1. No, much less certain than before how it would feel to work at a particular job.

Again, SES was a significant main effect, as well as TREATMENT and OCCUPATION.

LOW SES > MID SES ($p \leq .05$)

PROB SOLV > OCC INFO ($p \leq .01$)

X-RAY > MED LAB > SALES ($p \leq .05$)

7. Do you now know better exactly what would be expected of you on a job?

    5. Yes, much better idea now of what would be expected of me.
    4. Yes, a little better.
    3. About the same.
    2. No, a little less certain.
    1. No, much less certain than before of what would be expected of me.

Three main effects, SEX, TREATMENT and SES, were significant for this item.

LOW SES > MID SES ($p \leq .05$)

BOYS > GIRLS ($p \leq .01$)

PROB SOLV > OCC INFO ($p \leq .05$)

8. Do you feel that you know better now what you yourself would enjoy and be good at in an occupation?

   5. Yes, much better idea of what I would enjoy and be good at.
   4. Yes, a little better.
   3. About the same.
   2. No, a little less well.
   1. No, much poorer idea of what I would enjoy and be good at.

For Item 8, one main effect and two interactions were significant. The main effect was SES at the $p \leq .01$ level.

LOW SES > MID SES

The interactions of SES x TREATMENT and SES x TREATMENT x OCCUPATION indicated that the PROB SOLV KITS were generally more effective than OCC INFO at the MID SES school in developing the idea of what the Ss would enjoy or be good at in occupations. OCC INFO, however, was the more effective treatment in the LOW SES school. The second interaction showed OCC INFO to be more effective than PROB SOLV in developing these concepts for all of the occupations at the LOW SES school. PROB SOLV was the more effective treatment in the MID SES school for MED LAB and X-RAY, OCC INFO for SALES.

Summary of Results for the Student Reaction Sheet

The significant main effects showed two consistent trends.

The lower SES group gave more favorable reactions to the treatments than the middle SES group. Also, the problem solving treatment, compared to the occupational information control, produced the more positive responses. The number of main effects that were significant exceeded that anticipated by chance alone.

On the other hand, the number of significant interactions approximated chance occurrence. Repeatedly appearing in the interactions, however, was the indication that the lower SES group responded more to either treatment than the middle SES group, and that generally, problem solving produced more favorable reactions, though the magnitude varied and some reversals did occur for different occupations.

The items involved in most of the significant responses were Items 1, 6, 7, and 8. Item 1 concerned the student's desire to work on similar kits. The remaining items referred to the subject's knowledge of what particular jobs are like and his expectations for success at the jobs.

Analysis of Responses on the Vocational Planning Questionnaire

Table XX, XXI and XXII A-H summarize the significant interactions and main effects. Complete tables of cell means and the number of replications per cell are in Appendix C-2.

1. During the past seven days how much time have you spent talking about your possible future occupations?

(0) ☐ None
(1) ☐ 1-10 minutes
(2) ☐ 10-20 minutes
(3) ☐ 20-30 minutes
(4) ☐ 30-40 minutes
(5) ☐ 40-50 minutes
(6) ☐ 50-60 minutes
(7) ☐ More than one hour

No significant main effects or interactions were found.

TABLE XX

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL (OCCUPATIONS POOLED)

	Vocational Planning Questionnaire Items											
	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
SES		.05		.01				.01	.01	.05	.01	
SEX		.01						.01				
TREATMENT												
OCCUPATION												
SESxSEX											.01	
SESxTMT						.01		.05				
SESxOCC												
SEXxTMT						.05						
SEXxOCC											.05	.05
TMTxOCC												
SESxSEXxTMT												
SESxSEXxOCC							.05					
SESxTMTxOCC								.05				
SEXxTMTxOCC											.05	
SESxSEXxTMTxOCC						.05		.01				

TABLE XXI

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS

	Vocational Planning Questionnaire Items					
	1B-1	1B-3	2	3	3B	4
MID SES	.41	.12	1.22	1.03	.04	1.17
LOW SES	.55	.25	2.44	1.11	.18	1.28
BOYS	.33		1.24			
GIRLS	.60		1.19			

TABLE XXII

CELL MEANS FOR SIGNIFICANT INTERACTIONS

VOCATIONAL PLANNING QUESTIONNAIRE

TABLE XXII A

SES	SEX	Item No. 4
MID	BOYS	1.08
	GIRLS	1.25
LOW	BOYS	1.34
	GIRLS	1.25

TABLE XXII B

		Item No.	
SES	TREATMENT	1B-5	2
MID	PROB SOLV	.17	1.19
	OCC INFO	.03	1.25
LOW	PROB SOLV	.04	1.47
	OCC INFO	.09	1.29

TABLE XXII C

SEX	TREATMENT	Item No. 1B-5
BOYS	PROB SOLV	.17
	OCC INFO	.04
GIRLS	PROB SOLV	.07
	OCC INFO	.09

TABLE XXII D

		Item No.	
SEX	OCCUPATION	4	5
BOYS	MED LAB	1.17	1.74
	X RAY	1.14	1.86
	SALES	1.27	1.93
GIRLS	MED LAB	1.27	1.91
	X RAY	1.32	1.88
	SALES	1.18	1.90

TABLE XXII E

SES	SEX	OCCUPATION	Item No. 1B-6
MID	BOYS	MED LAB	.11
		X RAY	.04
		SALES	.24
	GIRLS	MED LAB	.14
		X RAY	.28
		SALES	.10
LOW	BOYS	MED LAB	.13
		X RAY	.16
		SALES	.10
	GIRLS	MED LAB	.14
		X RAY	.08
		SALES	.14

TABLE XXII (Cont.)

CELL MEANS FOR SIGNIFICANT INTERACTIONS
VOCATIONAL PLANNING QUESTIONNAIRE

TABLE XXII F

SES	TREATMENT	OCCUPATION	Item No. 2
MID	PROB SOLV	MED LAB	1.19
		X RAY	1.31
		SALES	1.16
	OCC INFO	MED LAB	1.24
		X RAY	1.21
		SALES	1.17
LOW	PROB SOLV	MED LAB	1.30
		X RAY	1.56
		SALES	1.48
	OCC INFO	MED LAB	1.24
		X RAY	1.27
		SALES	1.35

TABLE XXII G

SEX	TREATMENT	OCCUPATION	Item No. 4
BOYS	PROB SOLV	MED LAB	1.20
		X RAY	1.05
		SALES	1.44
	OCC INFO	MED LAB	1.34
		X RAY	1.23
		SALES	1.15
GIRLS	PROB SOLV	MED LAB	1.28
		X RAY	1.30
		SALES	1.23
	OCC INFO	MED LAB	1.27
		X RAY	1.34
		SALES	1.14

TABLE XXII (Cont.)

CELL MEANS FOR SIGNIFICANT INTERACTIONS
VOCATIONAL PLANNING QUESTIONNAIRE

TABLE XXII H

				Item No.	
SES	SEX	TREATMENT	OCCUPATION	1B-5	2
MID	BOYS	PROB SOLV	MED LAB	.38	1.07
			X RAY	.15	1.30
			SALES	.15	1.07
		OCC INFO	MED LAB	0	1.38
			X RAY	.08	1.16
			SALES	0	1.16
	GIRLS	PROB SOLV	MED LAB	0	1.23
			X RAY	.16	1.16
			SALES	.20	1.33
		OCC INFO	MED LAB	0	1.21
			X RAY	.06	1.43
			SALES	.05	1.15
LOW	BOYS	PROB SOLV	MED LAB	0	1.42
			X RAY	.12	1.33
			SALES	0	1.40
		OCC INFO	MED LAB	.25	1.00
			X RAY	0	1.25
			SALES	0	1.18
	GIRLS	PROB SOLV	MED LAB	.06	1.38
			X RAY	.07	1.71
			SALES	0	1.50
		OCC INFO	MED LAB	.07	1.37
			X RAY	.20	1.30
			SALES	.11	1.66

1b. If you did talk with some persons about possible occupations, check who they were below and give their names:

(1) ☐ My friend(s): ____________________________
(2) ☐ My parent(s): ____________________________
(3) ☐ My relative(s): ____________________________
(4) ☐ My teacher(s): ____________________________
(5) ☐ My counselor(s): ____________________________
(6) ☐ Other(s): ____________________________

1b(1) Two main effects, SES and SEX, were significant.

LOW SES > MID SES ($p \leq .05$)
GIRLS > BOYS ($p \leq .01$)

1b(2) No significant main effects or interactions were found.

1b(3) SES was a significant main effect at $p \leq .01$.

LOW SES > MID SES

1b(4) No significant main effects or interactions were found.

1b(5) Three interactions were significant: SES x TREATMENT, SEX x TREATMENT, and SES x SEX x TREATMENT x OCCUPATION.

The SES x TREATMENT interaction showed PROB SOLV resulted in more MID SES Ss speaking with their counselor than LOW SES speaking with theirs about occupational topics. In contrast OCC INFO produced somewhat more counselor conferences than PROB SOLV in the LOW SES school. The second interaction, SEX x TREATMENT, indicated that BOYS who received the PROB SOLV treatment talked more with their counselors than BOYS who received OCC INFO. Among GIRLS this treatment effect was slightly reversed. In the four-way interaction PROB SOLV for all occupations among both sexes at the MID SES school was more effective in promoting counselor-student discussions than OCC INFO. At the LOW SES school, however, PROB SOLV had mixed effects with BOYS: X-RAY PROB SOLV produced more discussion than X-RAY OCC INFO, but MED LAB OCC INFO was more effective than MED LAB PROB SOLV. PROB SOLV for all occupations was less effective than OCC INFO among GIRLS at the LOW SES school.

1b (6) One interaction, SES x SEX x OCCUPATION, was significant.

BOYS who received the MED LAB and X-RAY materials at the LOW SES school discussed occupations more with "others" than BOYS receiving those occupational materials at the MID SES school. BOYS receiving SALES kits at the MID SES school entered into more discussion than LOW SES BOYS receiving SALES kits. Although among GIRLS, MED LAB had equal effect at both schools, X-RAY at the MID SES school and SALES at the LOW SES school produced increased discussion.

2. Did you mail the post card requesting information about occupations?

☐ Yes. ☐ No.

For Item 2, two main effects were significant: SES and SEX, both at $p \leq .01$.

LOW SES > MID SES
BOYS > GIRLS

In addition, three interactions were significant; they were SES x TREATMENT, SES x TREATMENT x OCCUPATION and SES x SEX x TREATMENT x OCCUPATION. The SES x TREATMENT interaction showed that PROB SOLV produced more requests for information than OCC INFO in the LOW SES group but not in the MID SES group. The second interaction indicated that PROB SOLV resulted in greater inquiry within the LOW SES school than NON PROB SOLV for all three occupations. Within the MID SES group, however, PROB SOLV was more influential in only one occupation

(X-RAY). The three-way interaction trends were not consistent for both sexes. BOYS in the LOW SES school consistently sent more requests under PROB SOLV than NON PROB SOLV for all occupations. GIRLS in the LOW SES school also responded better to PROB SOLV in the X-RAY occupation but not SALES. In the MID SES high school no consistent trends were apparent.

3. During the past seven days have you written anywhere else for occupational information?

☐ Yes. ☐ No.

One main effect, SES, was significant.

$\text{LOW SES} > \text{MID SES}\ (p \leq .01)$

3b. If you answered "Yes," tell what you requested (the kind of information and/or whom you wrote to):

____

____

SES was also a significant main effect for Item 3b.

$\text{LOW SES} > \text{MID SES}\ (p \leq .05)$

4. During the past seven days have you read any books or pamphlets about any jobs or about choosing an occupation?

☐ Yes. ☐ No.

One main effect and three interactions attained significance. The main effect again was SES.

$\text{LOW SES} > \text{MID SES}\ (p \leq .01)$

Interactions, SES x SEX, SEX x OCCUPATION, and SEX x TREATMENT x OCCUPATION, indicated that GIRLS of the MID SES and LOW SES schools read equally into occupational materials, but that BOYS of the LOW SES school read more than BOYS of the MID SES school. GIRLS who received the MED LAB and X-RAY materials read more than BOYS receiving those kits, but BOYS who received the SALES kits responded slightly more than GIRLS receiving that material. The third interaction showed that PROB SOLV was more effective than OCC INFO among BOYS receiving SALES materials but the reverse trend held for BOYS receiving MED LAB or X-RAY materials. GIRLS receiving PROB SOLV in MED LAB and SALES read more than GIRLS receiving OCC INFO in those occupations. GIRLS who worked with OCC INFO in X-RAY, however, read more than those receiving PROB SOLV in X-RAY.

5. Realistically, when it comes to choosing a job I will (Check what you really will do.)

   ☐ wait until I'm about ready to start a job and then take the best job I can find.

   ☐ find out soon what the opportunities are for me in various occupations.

One interaction, SEX x OCCUPATION, was significant and indicated that GIRLS receiving MED LAB and X-RAY kits wanted to begin looking into occupations sooner than BOYS receiving those kits. BOYS who worked with the SALES kits, however, claimed they would begin their inquiries somewhat sooner than GIRLS receiving the SALES materials.

Summary of Results for Vocational Planning Questionnaire

Two main effects frequently were significant: SES and sex. A sex effect occurred on two items with no consistent trend. SES effects, however, occurred on six items; the lower SES group consistently engaging in more information seeking than the middle SES group.

The number of significant interactions conform to that expected by chance. Trends were inconsistent, but PROB SOLV did seem to generate more requests for information among the LOW SES BOYS.

Items 2 and 4 revealed frequent significant differences. The first of these items pertained to whether the subject mailed a post card requesting occupational information. The second concerned the amount of occupational reading during the criterion period.

Analysis of the Responses on the High School Vocational Survey

The material presented below relating to the analyses of responses to the survey is divided into three sections: (1) directional changes in interest ratings, (2) absolute changes in interest ratings and (3) changes in certainty ratings when interest ratings were constant.

Directional Changes in Interest Ratings for Each Occupation

Cell means and the number of replications per cell appear in Appendix C-3. A summary of significant main effects and interactions are given in Tables XXIII, XXIV and XXV A-C.

1. Ratings by Ss receiving MED LAD

Ratings for five items had significant main effects or interactions. The items were:

Item # 4. X-Ray technician
6. Nurse
7. Writer of advertising
#11. Doctor
#14. Hospital orderly

X-Ray Technician. One interaction was significant; it was SES x SEX. BOYS of the MID SES school and GIRLS of the LOW SES school increased their rated interest in the occupation of X-Ray technician, but the reversed combinations showed changes in the opposite direction.

Nurse. A main effect, SEX, was significant here.

BOYS > GIRLS ($p < .05$)

TABLE XXIII

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR MEAN DIRECTIONAL CHANGE IN INTEREST RATINGS FOR EACH OCCUPATION

	High School Vocational Survey Items														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MED LAB															
SES							.01								
SEX						.05									
TREATMENT														.05	
SESxSEX				.01							.05				
SESxTMT											.01				
SEXxTMT															
SESxSEXxTMT															
X RAY															
SES							.01					.05			
SEX															.05
TREATMENT															
SESxSEX		.05	.05												
SESxTMT	.01					.01									
SEXxTMT															
SESxSEXxTMT												.05			
SALES															
SES															
SEX															
TREATMENT											.05				
SESxSEX															
SESxTMT															
SEXxTMT															
SESxSEXxTMT															

TABLE XXIV

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS
HIGH SCHOOL VOCATIONAL SURVEY ITEMS

	OCCUPATIONAL BOOKLET						
	MED LAB			X-RAY			SALES
	Item No.			Item No.			Item No.
	6	7	14	7	12	15	11
MID SES		.13		.22	0		
LOW SES		-.24		-.36	-.41		
BOYS	.07					.18	
GIRLS	-.26					-.24	
PROB SOLV			.10				-.20
OCC INFO			-.30				.13

TABLE XXV

CELL MEANS FOR SIGNIFICANT INTERACTIONS
HIGH SCHOOL VOCATIONAL SURVEY ITEMS

TABLE XXV A

		OCCUPATIONAL BOOKLET			
		MED LAB		X-RAY	
		Item No.		Item No.	
SES	SEX	4	11	2	3
MID	BOYS	.12	.19	-.15	-.08
	GIRLS	-.07	-.04	.07	0
LOW	BOYS	-.50	-.35	.35	.35
	GIRLS	.53	.04	-.09	-.32

TABLE XXV B

		OCCUPATIONAL BOOKLET		
		MED LAB	X-RAY	
		Item No.	Item No.	
SES	TREATMENT	11	1	6
MID	PROB SOLV	.21	.20	.12
	OCC INFO	-.08	-.07	-.14
LOW	PROB SOLV	-.29	.29	-.52
	OCC INFO	.10	.11	.11

TABLE XXV C

			OCCUPATIONAL BOOKLET
			X-RAY
			Item No.
SES	SEX	TREATMENT	12
MID	BOYS	PROB SOLV	-.38
		OCC INFO	.30
	GIRLS	PROB SOLV	.33
		OCC INFO	-.20
LOW	BOYS	PROB SOLV	-.22
		OCC INFO	-.62
	GIRLS	PROB SOLV	-.58
		OCC INFO	-.20

__Writer of Advertising__. SES was a significant main effect at $p \leq .01$.

MID SES > LOW SES

__Doctor__. The interactions of SES x SEX and SES x TREATMENT were significant. PROB SOLV increased interest in becoming a "doctor" more than OCC INFO in the MID SES school, but decreased it in the LOW SES school. BOYS in the MID SES school showed increased interest, while BOYS in the LOW SES school showed decreased interest.

__Hospital Orderly__. TREATMENT was a significant main effect at the $p \leq .05$ level.

PROB SOLV > OCC INFO

II. Ratings by __S__s receiving X-RAY

Seven items showed significant main effects and interactions:

Item # 1. Scientist
# 2. Bank teller
3. Accountant
6. Nurse
7. Writer of advertising
#12. Office manager
#15. Dental assistant

__Scientist__. One interaction, SES x TREATMENT, was significant. PROB SOLV for both SES groups increased interest in the "scientist" occupation; OCC INFO resulted in increased interest for the LOW SES group, but decreased interest for the MID SES group.

__Bank Teller__. SES x SEX was significant here: BOYS of the LOW SES school and GIRLS of the MID SES school displayed increased interest; BOYS of the MID SES school and GIRLS of the LOW SES school, decreased interest.

__Accountant__. Again, SES x SEX was a significant interaction reflecting the same trends as those for "bank teller" above.

Nurse. For this item a significant interaction was SES x TREATMENT. The PROB SOLV X-RAY kit decreased interest in "nurse" among LOW SES subjects while increasing it slightly in the MID SES group. OCC INFO had less impact, but the trends were just oppositethose for PROB SOLV.

Writer of Advertising. A main effect, SES, was signficant ($p \leq .01$).

MID SES > LOW SES

Officer Manager. SES was significant at the $p \leq .05$ level, as well as the three-way interaction.

MID SES > LOW SES

Interest decreased within the LOW SES group for both sexes and treatments. GIRLS receiving PROB SOLV treatments in the MID SES group changed their ratings positively, but BOYS of the MID SES group who received PROB SOLV changed their ratings negatively. For OCC INFO in the MID SES group changes in relation to the sex groupings were the opposite of those for PROB SOLV.

Dental Assistant. A significant SEX effect was noted for this item.

BOYS > GIRLS ($p \leq .05$)

III. Ratings by *S*s receiving SALES

One item, Item 11, showed a significant main effect.

Doctor. For this item TREATMENT was significant at the $p \leq .05$ level.

OCC INFO > PROB SOLV

Summary of Results for Directional Changes of Interest

The number of significant main effects and interactions all fall within the range anticipated by chance. Among the main effects was a constant pattern of the middle SES group showing more increased interest regardless of treatment than the lower SES group. In the sex effect boys showed more positive changes than girls.

No consistent trends appeared in the significant interactions. No item on the survey was the locus of significant main effects or interactions.

Absolute Changes in Interest Ratings for Each Occupation

Tables XXVI, XXVII and XXVIII A-D summarize the significant main effects and interactions. Cell means and replications per cell are given in Appendix C-4.

I. Ratings by Ss receiving MED LAB

Six items had significant changes appearing in them.

Item #1. Scientist
#4. X-Ray technician
#5. Insurance agent
#6. Nurse
#7. Writer of advertising
#9. Office worker

Scientist. The interaction of SES x TREATMENT showed large absolute changes for OCC INFO at the LOW SES school and PROB SOLV at the MID SES school, but small changes for PROB SOLV at the LOW SES school and OCC INFO at the MID SES school.

X-Ray Technician. SES x SEX was a significant interaction: GIRLS in the LOW SES group made greater absolute rating changes then those in the MID SES group. For BOYS, however, the trend was reversed.

TABLE XXVI

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR MEAN ABSOLUTE CHANGES IN INTEREST RATINGS FOR EACH OCCUPATION

	High School Vocational Survey Items														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MED LAB															
SES					.01										
SEX						.01	.01								
TREATMENT						.05									
SESxSEX				.05											
SESxTMT	.01								.05						
SEXxTMT							.05								
SESxSEXxTMT															
X-RAY															
SES			.01												
SEX														.01	
TREATMENT															
SESxSEX															
SESxTMT															
SEXxTMT								.05							
SESxSEXxTMT		.05											.01		
SALES															
SES															
SEX				.01		.01								.01	
TREATMENT						.05				.01		.05			.05
SESxSEX					.05										
SESxTMT				.05							.05				
SEXxTMT										.05					
SESxSEXxTMT															

TABLE XXVII

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS
HIGH SCHOOL VOCATIONAL SURVEY ITEMS

	OCCUPATIONAL BOOKLET										
	MED LAB Item No.			X-RAY Item No.		SALES Item No.					
	5	6	7	3	14	4	6	10	12	14	15
MID SES	.31			.30							
LOW SES	.67			.69							
BOYS		.17	.69		.65	.36	.16			.36	
GIRLS		.51	.35		.26	.74	.52			.70	
PROB SOLV		.25					.27	.29	.43		.45
OCC INFO		.49					.41	.62	.81		.69

TABLE XXVIII

CELL MEANS FOR SIGNIFICANT INTERACTIONS
HIGH SCHOOL VOCATIONAL SURVEY ITEMS

TABLE XXVIIIA

		OCCUPATIONAL BOOKLET	
		MED LAB Item No.	SALES Item No.
SES	SEX	4	5
MID	BOYS	.80	.20
	GIRLS	.35	.39
LOW	BOYS	.64	.56
	GIRLS	1.00	.33

TABLE XXVIIIB

		OCCUPATIONAL BOOKLET			
		MED LAB Item No.		SALES Item No.	
SES	TREATMENT	1	9	4	11
MID	PROB SOLV	.67	.75	.58	.45
	OCC INFO	.23	.29	.54	.35
LOW	PROB SOLV	.05	.24	.37	.37
	OCC INFO	.60	.44	.73	.72

TABLE XXVIII (cont.)

TABLE XXVIIIC

SEX	TREATMENT	OCCUPATIONAL BOOKLET MED LAB Item No. 7	OCCUPATIONAL BOOKLET X-RAY Item No. 8	OCCUPATIONAL BOOKLET SALES Item No. 10
BOYS	PROB SOLV	.49	.31	.09
	OCC INFO	.89	.66	.81
GIRLS	PROB SOLV	.39	.71	.46
	OCC INFO	.31	.56	.39

TABLE XXVIIID

SES	SEX	TREATMENT	OCCUPATIONAL BOOKLET X-RAY Item No. 2	OCCUPATIONAL BOOKLET X-RAY Item No. 13
MID	BOYS	PROB SOLV	.46	.46
		OCC INFO	.61	.23
	GIRLS	PROB SOLV	.16	.33
		OCC INFO	.40	.86
LOW	BOYS	PROB SOLV	.44	.44
		OCC INFO	.75	1.00
	GIRLS	PROB SOLV	.83	.58
		OCC INFO	.20	.20

Insurance Agent. SES was a significant main effect at ($p \leq .01$)

LOW SES > MID SES

Nurse. Two main effects were significant, SEX and TREATMENT.

GIRLS > BOYS ($p \leq .01$)
OCC INFO > PROB SOLV ($p \leq .05$)

Writer of Advertising. The SEX effect was significant.

BOYS > GIRLS ($p \leq .01$)

Also significant was the interaction SEX x TREATMENT. BOYS made a disproportionately large change when given OCC INFO.

Officer Worker. SES and TREATMENT was a significant interaction. PROB SOLV produced more interest change than OCC INFO in the MID SES school but less in the LOW SES school.

II. Ratings by *S*s receiving X-RAY

Rating changes appeared in five items.

Item # 2. Bank teller
# 3. Accountant
8. Medical laboratory technologist
#13. Salesman/saleswoman
#14. Hospital orderly

Bank Teller. The second-order interaction, SES x SEX x TREATMENT, indicated that BOYS at the MID SES school and GIRLS at the LOW SES school who received PROB SOLV materials made larger changes in interest ratings for "bank teller" than did the comparable groups receiving OCC INFO materials. OCC INFO was more influential for GIRLS at the MID SES school and BOYS at the LOW SES school.

Accountant. A SES main effect was significant at $p \leq .01$.

LOW SES > MID SES

Medical Laboratory Technologist. The interaction SEX x TREATMENT showed GIRLS who received PROB SOLV changed their ratings of this occupation more than GIRLS receiving OCC INFO. In contrast, BOYS who received OCC INFO changed their ratings more than BOYS who received PROB SOLV.

Salesman/Saleswoman. SES x SEX x TREATMENT was significant. BOYS of the MID SES school and GIRLS of the LOW SES school who received PROB SOLV materials altered their interest ratings for this occupation more than those respective groups who received OCC INFO materials. GIRLS of the MID SES school and BOYS of the LOW SES school who received OCC INFO changed their ratings more than those MID SES GIRLS and LOW SES BOYS who received PROB SOLV materials.

Hospital Orderly. A main effect, SEX, was significant ($p \leq .01$).

BOYS > GIRLS

III. Ratings by Ss receiving SALES

Rating changes occurred in the following eight items:

Item # 4. X-Ray technician
5. Insurance agent
6. Nurse
#10. Sales manager
#11. Doctor
#12. Office manager
#14. Hospital orderly
#15. Dental assistant

X-Ray Technician. One main effect, SEX, and one interaction, SES x TREATMENT, were significant.

GIRLS > BOYS ($p \leq .01$)

The interaction indicated that ratings of this occupation changed more in the LOW SES group as a result of OCC INFO than PROB SOLV. On the other hand, PROB SOLV in the MID SES group produced somewhat more rating change than OCC INFO.

Insurance Agent. The interactions, SES x SEX, was significant and showed that BOYS of the LOW SES school altered their interest ratings of "insurance agent" more than GIRLS at that school. Conversely, GIRLS at the MID SES school changed their ratings more than the BOYS.

Nurse. Two main effects were significant. They were SEX and TREATMENT.

GIRLS > BOYS ($p \leq .01$)
OCC INFO > PROB SOLV ($p \leq .05$)

Sales Manager. A TREATMENT effect was significant at $p \leq .01$.

OCC INFO > PROB SOLV

Also one interaction was significant: SEX x TREATMENT. PROB SOLV among BOYS resulted in less rating change than OCC INFO, but among GIRLS, PROB SOLV resulted in more rating change than OCC INFO.

Doctor. The interaction, SES x TREATMENT, was significant for this item. PROB SOLV produced more change in interest rating for "doctor" than did OCC INFO in the MID SES group. However, the reversed condition held for the LOW SES group.

Office Manager. One main effect, TREATMENT, was significant.

OCC INFO > PROB SOLV ($p \leq .05$)

Hospital Orderly. A main effect for SEX appeared for this item.

GIRLS > BOYS ($p \leq .01$)

Dental Assistant. One main effect was significant: TREATMENT at $p \leq .05$. OCC INFO > PROB SOLV

Summary of Results for Absolute Changes of Interests

Among main effects the only consistent trend across occupations was in the treatment effect. Occupational information influenced larger absolute changes in interest ratings than problem solving. In the sex effect a tendency appeared for boys to achieve higher means than girls, but this was pronounced only in the sales occupation group.

The interactions indicated no stable trends, although the larger extremes in responses generally occurred in the lower SES group.

Significant changes in ratings were scattered evenly among items in the survey. Significant main effects exceeded in number those expected by chance, but significant interactions did not.

Absolute Changes in Certainty When Interest Ratings Remained Unchanged

Cell means and the number of replications per cell appear in Appendix C-5. A summary of significant main effects and interactions are given in Tables XXIX, XXX and XXXI A-2.

Items showing significant changes in certainty ratings were:

Item # 2. Bank teller
3. Accountant
4. X-Ray technician
5. Insurance agent
6. Nurse
8 Medical laboratory technologist
#10. Sales manager
#11. Doctor
#12. Office manager
#13. Salesman/saleswoman

Bank Teller. Two interactions were significant. TREATMENTxOCCUPATION and SESxSEXxOCCUPATION. In the former interaction certainty changes occurred more in the PROB SOLV treatment for MED LAB and X-RAY occupations, but more in the OCC INFO treatment for SALES. In the

TABLE XXIX

SIGNIFICANT PROBABILITY VALUES FOR MAIN EFFECTS AND INTERACTIONS FOR ABSOLUTE CHANGE IN CERTAINTY RATINGS WHEN INTEREST RATINGS REMAINED UNCHANGED

	HIGH SCHOOL VOCATIONAL SURVEY ITEMS														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SES				.01		.01		.05		.01	.05	.01	.01		
SEX															
TREATMENT													.05		
OCCUPATION				.05									.05		
SESxSEX													.05		
SESxTMT															
SESxOCC													.05		
SEXxTMT											.05	.01	.05		
SEXxOCC				.01		.05		.05				.01			
TMTxOCC		.01	.05	.01	.01							.01			
SESxSEXxTMT								.05				.05			
SESxSEXxOCC		.05		.01	.05	.05		.05				.01			
SESxTMTxOCC						.05		.01				.01	.01		
SEXxTMTxOCC				.05				.05			.05		.05		
SESxSEXxTMTxOCC								.05			.05				

TABLE XXX

CELL MEANS FOR SIGNIFICANT MAIN EFFECTS

	HIGH SCHOOL VOCATIONAL SURVEY						
	Item No.						
	4	6	8	10	11	12	13
MID SES	.46	.22	.42	.38	.35	.35	.33
LOW SES	.81	.56	.82	.79	.73	.65	.47
PROB SOLV							.36
OCC INFO							.42
MED LAB	.46						.29
X RAY	.44						.29
SALES	.75						.56

TABLE XXXI

CELL MEANS FOR SIGNIFICANT INTERACTIONS
HIGH SCHOOL VOCATIONAL SURVEY

TABLE XXXI A

SES	SEX	Item No. 13
MID	BOYS	.43
	GIRLS	.23
LOW	BOYS	.47
	GIRLS	.47

TABLE XXXI B

SES	OCCUPATION	Item No. 13
MID	MED LAB	.14
	X RAY	.26
	SALES	.55
LOW	MED LAB	.50
	X RAY	.33
	SALES	.58

TABLE XXXI (cont.)

TABLE XXXI C

SEX	TREATMENT	Item No. 11	12	13
BOYS	PROB SOLV	.69	.72	.45
	OCC INFO	.38	.29	.44
GIRLS	PROB SOLV	.27	.44	.28
	OCC INFO	.71	.47	.47

TABLE XXXI D

SEX	OCCUPATION	Item No. 4	6	8	12
BOYS	MED LAB	.53	.32	.50	.62
	X RAY	.69	.59	.76	.56
	SALES	.55	.26	.50	.33
GIRLS	MED LAB	.42	.39	.48	.32
	X RAY	.50	.36	.91	.42
	SALES	1.00	.32	.80	.66

TABLE XXXI E

TREATMENT	OCCUPATION	Item No. 2	3	4	5	12
PROB SOLV	MED LAB	.61	.77	.50	.39	.64
	X RAY	.44	.40	.63	.58	.65
	SALES	.22	.33	.64	.25	.42
OCC INFO	MED LAB	.24	.26	.41	.27	.26
	X RAY	.33	.38	.58	.46	.36
	SALES	.64	.57	.85	.64	.63

TABLE XXXI F

SES	SEX	TREATMENT	Item No. 8	12
MID	BOYS	PROB SOLV	.43	.57
		OCC INFO	.43	.20
	GIRLS	PROB SOLV	.47	.26
		OCC INFO	.39	.38
LOW	BOYS	PROB SOLV	1.23	1.00
		OCC INFO	.50	.46
	GIRLS	PROB SOLV	.62	.59
		OCC INFO	1.07	.64

TABLE XXXI (cont.)

TABLE XXXI G

			Item No.					
SES	SEX	OCCUPATION	2	4	5	6	8	12
MID	BOYS	MED LAB	.23	.20	.62	.10	.33	.46
		X RAY	.38	.42	.50	.14	.50	.33
		SALES	.47	.64	.54	.22	.43	.35
	GIRLS	MED LAB	.43	.37	.23	.33	.39	.23
		X RAY	.40	.42	.30	.26	.62	.42
		SALES	.29	.62	.10	.31	.31	.35
LOW	BOYS	MED LAB	.75	1.00	.14	.64	1.00	.87
		X RAY	.25	1.00	1.43	1.30	1.08	1.25
		SALES	.80	.41	.10	.26	.57	.30
	GIRLS	MED LAB	.35	.50	.25	.43	.60	.43
		X RAY	.45	.62	.43	.46	.57	.41
		SALES	.41	1.50	.73	.33	1.00	1.09

TABLE XXXI H

			Item No.			
SES	TREATMENT	OCCUPATION	6	8	12	13
MID	PROB SOLV	MED LAB	.15	.16	.43	.11
		X RAY	.20	.83	.56	.23
		SALES	.26	.35	.31	.68
	OCC INFO	MED LAB	.27	.53	.25	.18
		X RAY	.20	.35	.29	.30
		SALES	.26	.36	.38	.42
LOW	PROB SOLV	MED LAB	.71	1.00	.91	.38
		X RAY	.93	1.00	.75	.50
		SALES	.07	.62	.53	.23
	OCC INFO	MED LAB	.27	.50	.27	.63
		X RAY	.83	.75	.50	.17
		SALES	.46	1.00	1.16	.92

TABLE XXXI (Cont.)

TABLE XXXI I

SEX	TREATMENT	OCCUPATION	Item No. 4	8	11	13
BOYS	PROB SOLV	MED LAB	.89	.71	.83	.45
		X RAY	.70	1.00	.69	.26
		SALES	.27	.37	.54	.62
	OCC INFO	MED LAB	.12	.33	.53	.25
		X RAY	.69	.36	.31	.20
		SALES	.72	.59	.31	.68
GIRLS	PROB SOLV	MED LAB	.29	.27	.40	.10
		X RAY	.37	.82	.14	.43
		SALES	.93	.56	.21	.37
	OCC INFO	MED LAB	.57	.64	1.00	.44
		X RAY	.99	.57	.33	.26
		SALES	1.11	.58	1.05	.54

TABLE XXXI (cont.)

TABLE XXXI J

SES	SEX	TREATMENT	OCCUPATION	Item No. 8	11
MID	BOYS	PROB SOLV	MED LAB	.16	.55
			X RAY	.37	.62
			SALES	.50	.37
		OCC INFO	MED LAB	.50	.80
			X RAY	.44	.30
			SALES	.33	.30
	GIRLS	PROB SOLV	MED LAB	.16	.66
			X RAY	1.20	.12
			SALES	.16	0
		OCC INFO	MED LAB	.55	.10
			X RAY	.25	.11
			SALES	.37	.16
LOW	BOYS	PROB SOLV	MED LAB	4.00	1.66
			X RAY	1.33	.80
			SALES	0	1.00
		OCC INFO	MED LAB	0	0
			X RAY	0	.33
			SALES	.77	.33
	GIRLS	PROB SOLV	MED LAB	.40	.18
			X RAY	.50	.16
			SALES	.80	.33
		OCC INFO	MED LAB	.80	1.90
			X RAY	1.00	.66
			SALES	1.66	2.00

latter interaction GIRLS in the LOW SES school indicated more certainty changes for all occupations than did GIRLS in the MID SES school. BOYS in the LOW SES school showed more change from MED LAB and SALES than BOYS at the MID SES school. MID SES BOYS changed more from X-RAY than did LOW SES BOYS.

Accountant. TREATMENT x OCCUPATION was also a signficant interaction for this item. PROB SOLV for MED LAB changed certainty about this occupation more than OCC INFO. OCC INFO for X-RAY and SALES was more effective than PROB SOLV.

X-Ray Technician. Two main effects, SES and OCCUPATION, and four interactions were significant.

LOW SES > MID SES ($p \leq .01$)
SALES > MED LAB > X-RAY ($p \leq .05$)

The interactions were: SEX x OCCUPATION, TREATMENT x OCCUPATION, SES x SEX x OCCUPATION, and SEX x TREATMENT x OCCUPATION. BOYS receiving MED LAB and X-RAY materials changed in certainty about "X-ray technician" more than GIRLS receiving these materials. GIRLS, however, receiving SALES kits changed more in their ratings than BOYS having worked with SALES. More certainty rating changes were associated with PROB SOLV for MED LAB and X-RAY than for OCC INFO in these occupations. However, PROB SOLV produced less change than OCC INFO in SALES.

The SES x SEX x OCCUPATION interaction indicated that GIRLS at the LOW SES school, for all occupations, made more certainty rating changes for this item than did GIRLS at the MID SES school. Similarly, BOYS of the LOW SES group for MED LAB and X-RAY made more certainty changes than those of the MID SES group, but in this latter group the

BOYS receiving SALES materials changed their ratings more.

BOYS receiving PROB SOLV treatments in MED LAB and X-RAY showed more certainty change than those receiving OCC INFO on these occupations. The reverse, however, held for BOYS working with SALES kits. Consistently, OCC INFO among GIRLS for all occupations resulted in more certainty change than PROB SOLV among GIRLS

Insurance Agent. The interaction of TREATMENT x OCCUPATION and SES x SEX x OCCUPATION were significant. The first interaction was identical in trend to that in Item 4, "X-ray technician" above. PROB SOLV was more effective than OCC INFO in the X-RAY and MED LAB kits but less effective in SALES.

In the second interaction GIRLS of the LOW SES school, again, changed their certainty ratings across each of the occupations more than did GIRLS of the MID SES school. BOYS of the MID SES school receiving MED LAB and SALES changed their certainty about "insurance agent" more than LOW SES BOYS receiving these occupations, but the LOW SES BOYS who received SALES changed more than the MID SES BOYS who received SALES.

Nurse. An SES effect was noted here at $p \leq .01$.

LOW SES > MID SES

Significant interactions were: SEX x OCCUPATION, SES x SEX x OCCUPATION and SES x TREATMENT x OCCUPATION. GIRLS who worked in MED LAB and SALES kits changed their certainty about the nursing occupation more than BOYS who worked in these kits. BOYS changed more than GIRLS, however, with regard to X-RAY. Both sexes changed their ratings more for all occupations in the LOW SES school compared to the MID SES school. At the MID SES school OCC INFO and PROB SOLV had equal effects on certainty ratings for X-RAY and SALES; for MED LAB, OCC INFO resulted in slightly more change than PROB SOLV. At the LOW SES school PROB SOLV resulted in more rating changes about "nurse" than OCC INFO for MED LAB and X-RAY; the opposite trend in treatments occurred for SALES.

Medical Laboratory Technologist. SES was again significant here.

LOW SES > MID SES ($p \leq .05$)

Six interactions were also significant. They were: SEX x OCCUPATION, SES x SEX x TREATMENT, SES x SEX x OCCUPATION, SES x TREATMENT x OCCUPATION, SEX x TREATMENT x OCCUPATION, and SES x SEX x TREATMENT x OCCUPATION. BOYS reacted with more certainty change to MED LAB kits than did GIRLS, but GIRLS reacted more to X-RAY and SALES than did BOYS. BOYS and GIRLS of the LOW SES school altered their certainty estimates to "medical laboratory technologist" for both PROB SOLV and OCC INFO than did BOYS and GIRLS of the MID SES school. BOYS of the LOW SES school changed in certainty more than BOYS of the MID SES school for all three occupations. This trend maintained also for GIRLS receiving MED LAB and SALES, but was slightly reversed for X-RAY.

The LOW SES group responded with more change than the MID SES group to PROB SOLV for all occupations, and also to OCC INFO for X-RAY and SALES. The MID SES group changed more than the LOW SES group for OCC INFO on MED LAB.

PROB SOLV resulted in more rating changes among BOYS receiving MED LAB and X-RAY occupational materials than among BOYS receiving OCC INFO for these two occupations. BOYS changed in certainty more with OCC INFO in SALES than with PROB SOLV in SALES. PROB SOLV and OCC INFO had exactly the opposite effects among GIRLS. They reacted more to OCC INFO for MED LAB and X-RAY, and to PROB SOLV for SALES.

The four-way interaction showed that GIRLS of the LOW SES school consistently changed their certainty ratings of "medical laboratory technologist" more when they received the OCC INFO treatment for these occupations than when they received the PROB SOLV treatment. BOYS of the LOW SES school responded more to PROB SOLV in MED LAB and X-RAY, but to OCC INFO in SALES. At the MID SES school certainty changes were largest among BOYS receiving PROB SOLV in X-RAY and SALES, and OCC INFO in MED LAB; GIRLS receiving PROB SOLV in X-RAY and OCC INFO in MED LAB and SALES made the greatest changes.

Sales Manager. One main effect was significant: SES at the $p \leq .01$ level.

LOW SES > MID SES

Doctor. SES was again a significant effect.

LOW SES > MID SES ($p \leq .05$)

Three significant interactions were: SEX x TREATMENT, SEX x TREATMENT x OCCUPATION, and SES x SEX x TREATMENT x OCCUPATION. In the SEX x TREATMENT interaction PROB SOLV resulted in more certainty rating change than OCC INFO for BOYS. GIRLS responded in the opposite direction to the treatments. This same trend appeared in the second interaction. PROB SOLV for all occupations among BOYS resulted in more rating change than OCC INFO, but OCC INFO for all occupations promoted more change among GIRLS than did PROB SOLV. The four-way interaction further supported the above statements but only for the LOW SES group. In the MID SES group BOYS responded more to PROB SOLV in X-RAY and SALES and to OCC INFO in MED LAB. GIRLS responded more to PROB SOLV in MED LAB and X-RAY and to OCC INFO in SALES.

Office Manager. One main effect and sex interactions were significant for this item. The main effect was SES.

$$\text{LOW SES} > \text{MID SES} \ (p \leq .01)$$

Interactions that were significant were SEX x TREATMENT, SEX x OCCUPATION, TREATMENT x OCCUPATION, SES x SEX x TREATMENT, SES x SEX x OCCUPATION and SES x TREATMENT x OCCUPATION. SEX x TREATMENT showed BOYS changing their certainty about "office manager" more in the PROB SOLV treatment than in the OCC INFO treatment. For GIRLS the trend was slightly reversed. BOYS changed more ratings than GIRLS in the MED LAB and X-RAY occupations, but GIRLS changed more than BOYS in SALES. The TREATMENT x OCCUPATION interaction showed that PROB SOLV resulted in more certainty changes for MED LAB and X-RAY than did OCC INFO for the two occupations. However, OCC INFO brought about more change than PROB SOLV for SALES. The SES x SEX x TREATMENT interaction showed both sexes in the LOW SES school respond more to both treatments than their counterparts in the MID SES school. Within the LOW SES school PROB SOLV effected more change in certainty among BOYS than GIRLS, but OCC INFO influenced more change among GIRLS than BOYS. The SES x TREATMENT x OCCUPATION interaction showed that both PROB SOLV and OCC INFO resulted in more certainty change for the LOW SES group than for the MID SES group for each of the three occupations. In the LOW SES group PROB SOLV was more effective for MED LAB and X-RAY, and OCC INFO more for SALES.

Salesman/Saleswoman. Three main effects and five interactions were significant. The main effects were: SES, TREATMENT, and OCCUPATION.

$\text{LOW SES} > \text{MID SES } (p \leq .01)$
$\text{OCC INFO} > \text{PROB SOLV } (p \leq .05)$
$\text{SALES} > \text{MED LAB, X-RAY } (p \leq .05)$

Significant interactions were: SES x SEX, SES x OCCUPATION, SES x TREATMENT, SES x TREATMENT x OCCUPATION, and SEX x TREATMENT x OCCUPATION. The SES x SEX interaction showed about equal changes in certainty for all groups except GIRLS at the MID SES school who changed less. The MED LAB occupational materials caused more change in the LOW than MID SES group, but other occupations were about equal. The SEX x TREATMENT interaction showed PROB SOLV to influence more change among BOYS than among GIRLS, but OCC INFO to be the more effective among GIRLS than among BOYS.

The SES x TREATMENT x OCCUPATION interaction showed that PROB SOLV for SALES produced more certainty change than OCC INFO at the MID SES school; OCC INFO at that school brought about more change than PROB SOLV for MED LAB and X-RAY. In the LOW SES school PROB SOLV was the more effective with X-RAY, but OCC INFO was the more effective with MED LAB and SALES. SEX x TREATMENT x OCCUPATION indicated that BOYS responded with more rating change to PROB SOLV in MED LAB and X-RAY than OCC INFO in those fields, and more to OCC INFO in SALES than to PROB SOLV in SALES. GIRLS reacted more to PROB SOLV in X-RAY than to OCC INFO in X-RAY, but more to OCC INFO in MED LAB and SALES than to PROB SOLV in those occupations.

Summary of Results for Changes in Certainty Ratings

The principal trend in main effects again related to SES. The lower SES group consistently changed more in certainty about their occupational interest ratings than the middle SES group. For occupations, Sales produced the most changes, but only two occupation effects appeared among the 15 items.

Trends among the interactions were generally non-existent, but the greatest range of responses appeared in the lower SES group; girls responding more to occupational information, especially in Sales, boys responding more to problem solving in the medical fields.

Items involved most in the significant main effects and interactions were: Item 4, X-Ray technician; Item 8, Medical laboratory technologist; Item 12, Office manager; and Item 13, Salesman/Saleswoman. Each of these was related to the occupations presented in the treatment materials.

Utilization of Information Resources and Validity of Self-Report Data

Utilization of School Counselor Resources

Two subjects at the lower SES school and five at the middle SES school made appointments and spoke with their counselors about vocational topics during the criterion period. Three of the students were males (one at the lower SES school and two at the middle SES school), four were females. No acceptable statistical significance could be ascribed to any treatment condition relative to the use of counselor resources. The breakdown of subject-counselor interviews by treatment category is represented in Table XXXII.

TABLE XXXII

NUMBER OF COUNSELOR INTERVIEWS BY INDEPENDENT VARIABLE CATEGORY

SES	SEX	OCCUPATION	TREATMENT	NUMBER OF INTERVIEWS
LOW	BOY	MED LAB	PROB SOLV	1
LOW	GIRL		CONTROL	1
MID	BOY	MED LAB	NON PROB SOLV	2
MID	BOY	X-RAY	NON PROB SOLV	1
MID	GIRL	SALES	OCC INFO	1
MID	GIRL		CONTROL	1
			TOTAL	7

Utilization of Library Resources

None of the students in either of the schools was recorded as having used his school library facilitites for occupational information resources during the criterion period. A large problem existed in attempting to record library use by the subjects. In each school the occupational literature was widely scattered throughout the library on open shelves and in pamphlet files. Observations and records by the librarians of material utilization were undoubtedly unreliable in that they could only obtain definite information when students asked them for materials. If subjects knew the location of occupational information in the library and made no inquiries of the librarians, their actions would not have been recorded.

Post Card Informational Request Data

Following the treatment session each S was given a post card (Appendix A-4) which would enable him to request information about any of 15 different occupations. One hundred eight cards were received during the criterion period; of these 97 were submitted by the problem, non-problem solving, and occupational information treatment groups. Eleven cards were sent by control group Ss, the data for whom was not analyzed as stated earlier. Table XXXIII summarizes post card receipt data.

Statistical tests of significance between problem solving and non-problem solving and between problem solving and occupational information revealed both statistically significant at $p \leq .01$. Overall, the problem solving treatment resulted in significantly more post card requests for information than either of the other treatments. However, it is obvious from Table XXXIII that the differences are due entirely to the GIRLS in the LOW SES school who responded more to the PROB SOLV treatment.

Validity of the Self-Report Data

Thoresen (1964) employed comparable self-report forms in a study of occupational and educational information-seeking. He randomly

TABLE XXXIII

NUMBER OF POST CARDS RECEIVED AND NUMBER OF Ss PER CELL BY TREATMENT, SEX, AND SES

			PROB SOLV	NON PROB SOLV	OCC INFO
BOYS	MID SES	Cards	4	4	8
		N	39	42	38
	LOW SES	Cards	4	2	4
		N	22	27	38
GIRLS	MID SES	Cards	8	9	8
		N	41	43	50
	LOW SES	Cards	24	11	11
		N	52	39	32
TOTAL		Cards	40	26	31
		N	154	151	158

selected protocols of 10 percent of his Ss for verification. He found that 93 percent of the Ss' statements were confirmed, 7 percent were unconfirmable and zero percent were disconfirmed (pp. 115-120). Drawing from Thoresen's evidence, none of the data reported here was certified by investigators in the field, but certain checks were made for the consistency of self-reports and other evidence of information-seeking. Item 2 of the Vocational Planning Questionnaire inquires whether the S sent a post card requesting occupational information; responses to this item were compared to the actual receipt of post cards by the experimenters within the criterion period. The postmark on the card was used to ascertain whether the card was mailed within the allotted time. Table XXIV displays this data in a 2x2 contingency format.

TABLE XXXIV

NUMBER OF SELF-REPORTS OF POST CARDS SENT AND NUMBER OF POST CARDS RECEIVED WITHIN TIME LIMIT

		Did Subject Report Sending Post Card?		
		NO	YES	
Was Post Card Received On Time?	YES	13	95	108
	NO	401	52	453
		414	147	561

χ^2 was significant at $p < .001$ with one degree of freedom. The four-point correlation was .69. Numerous cards appeared immediately following the posttreatment session in which the question was asked regarding mailing the post card. A second tabulation is shown by Table XXXV. Again χ^2 is significant at $p < .001$ with one degree of freedom, but the correlation increased to .83. Apparently, asking the question, "Did you mail the post card . . .?" prompted many _S_s to indicate affirmation followed by mailing of the card. This latter correlation coefficient is considered to be representative of the validity of the data reported.

TABLE XXXV

NUMBER OF SELF-REPORTS OF POST CARDS SENT AND NUMBER OF POST CARDS RECEIVED INCLUDING POST-FOLLOW-UP RETURNS

		Self-Report of Sending Post Card		
		NO	YES	
Post Card Received	YES	17	127	144
	NO	397	20	417
		414	147	561

Summary of Results

Comparisons between the problem-solving and non-problem-solving treatments and between problem-solving and occupational information treatments were made using data collected from three self-report forms and three behavioral measures. Analyses were made of student subjective responses as recorded on the Student Reaction Sheet, amount of career information seeking as recorded on the Vocational Planning Questionnaire, and changes in vocational interests as reported on the High School Vocational Survey. The actual extent to which students used vocational information resources (counselors, library and post card request for information) was also analyzed.

Student Subjective Reactions

The problem-solving treatment produced more interest in working on similar booklets in different occupations than did either of the two control treatments.

Students who had worked with the problem-solving materials indicated more knowledge of what would be expected on the job and what it would feel like to work at a particular occupation than did students who worked with the non-problem or occupational information materials.

Generally, boys responded more positively to all treatments than did girls. Students from the low socio-economic community responded more positively than did students from the middle socio-economic community.

When problem-solving and non-problem-solving treatments were compared for the three different occupations, the three occupations produced some significantly different reactions. The medical laboratory booklet consistently produced more positive responses, then the X-ray booklet and finally the sales booklet.

The number of statistically significant interactions involving socio-economic level, sex and treatment was approximately that which would be expected by chance. The lack of consistent patterns in these interactions also suggests that they were random occurrences.

Career Information Seeking

Students who had worked with problem-solving booklets reported writing more requests for occupational information than did those who had used the non-problem-solving booklets. Girls generally sought more information than boys. Contrary to expectations, subjects from the low socio-economic school sought more information than did those from the middle-class school. Some interactions suggested that the problem-solving materials were particularly effective with students from the lower socio-economic community.

Changes in Vocational Interest

More change in vocational interests, regardless of whether those interests increased or decreased, was produced by the occupational information booklets than by the problem-solving treatments. Differences between treatments in increasing or decreasing vocational interests was approximately that expected by chance.

More changes in degree of certainty about occupational interests were found among subjects from the low socio-economic school than from the middle-class school.

Utilization of Vocational Information Resources

Ninety-seven post card requests for occupational information were received from the 463 subjects in the experiment. The number from the problem-solving group was significantly higher than from either the non-problem-solving or the occupational information group. This significant treatment effect was largely due to the high response rate from the low-socio-economic girls who had worked on the problem-solving booklets.

None of the subjects in the experiment was recorded as having used library materials on vocations during the week following the treatments, and only seven subjects sought vocational information from their counselors. Treatment differences on these two criteria could not be tested with this low response rate.

Conclusion

As a method of encouraging career exploration among high school students, experimentation with problem-solving approaches to job simulation seems well justified.

The problem-solving career kits constructed for three different occupations produced in comparisons with similar control materials

(1) more interest in working on similar booklets in different occupations,

(2) more self-reported knowledge of what would be expected on a job,

(3) a better idea of what it would feel like to work at a

particular occupation, and

(4) more written requests(both self-reported and confirmed independently) for occupational information.

Particularly encouraging is the evidence of more positive reactions from the students at the low socio-economic school, a group usually not reached by conventional occupational information. The low socio-economic group

(1) gave more positive subjective reactions to the career materials,

(2) reported seeking more career information (particularly when given problem-solving materials),

(3) made more changes in how certain they were about their vocational interests, and

(4) sent more post card requests for occupational information (particularly girls receiving the problem-solving treatment.

BIBLIOGRAPHY

Beilin, H. The utilization of high level talent in lower socio-economic groups. Personnel and Guidance Journal, 1957, 35, 175-180.

Beilin, H. Discussion (of the Super, Tiedeman and Hall papers). Personnel and Guidance Journal, 1963, 41, 780-782.

Bordin, E. S. A theory of vocational interest as dynamic phenomena. Educational and Psychological Measurements, 1943, 3, 49-66.

Bordin E. S., & Wilson, E. H. Change of interest as a function of shift in curricular orientation. Educational and Psychological Measurements, 1953, 13, 297-307.

Carter, H. D. The development of vocational attitudes. Journal of Consulting Psychology, 1940, 4, 185-191.

Darley, J. G., & Hagenah, Theda. Vocational interest measurement, theory and practice. Minneapolis: Univ. of Minn. Press, 1955.

Dictionary of occupational titles. Washington, D. C.: United States Department of Labor, 1965.

Dixon, W. J. (Ed.) Biomedical computer programs. Los Angeles: School of Medicine, University of California, Los Angeles, 1965.

Gerken, C. Interests: Some questions we haven't asked. Vocational Guidance Quarterly, 1964, 12, 280-284.

Ginzberg, E., Ginsburg, S. W., Axelrad, S., & Herma, J. L. Occupational choice: An approach to a general theory. New York: Columbia Univ. Press., 1951.

Hagen, D. Careers and family atmospheres: An empirical test of Roe's theory. Journal of Counseling Psychology., 1960, 7, 251-256.

Hays, W. L. Statistics for psychologists. New York: Holt, Rinehart & Winston, 1965.

Holland, J. L. Major programs of research on vocational behavior. In Henry Borow (Ed.), Man in a world at work. Boston: Houghton Mifflin, 1964. Pp. 259-284.

Hollingshead, A. B. Elmtown's youth. New York: John Wiley & Sons, Inc., 1949.

Hoppock, R. Occupational information. New York: McGraw Hill, 1957.

Manpower report of the President and a report on manpower requirements, resources, utilization, and training. Washington, D. C.: United States Department of Labor, 1964.

Manpower resources of the San Francisco-Oakland Bay Area 1960-1970. San Francisco, California: California Department of Employment, May 1963.

Matteson, R. W. Experience-interest relationships as measured by an activity check list. Journal of Counseling Psychology, 1955, 2, 13-16. (a)

Matteson, R. W. Experience-interest changes in students. Journal of Counseling Psychology, 1955, 2, 113-120. (b)

May, M. A., & Lumsdaine, A. A. Learning from films. New Haven: Yale Univer. Press, 1958.

Meyer, G. R., & Penfold, D. M. E. Factors associated with interest in science. British Journal of Educational Psychology, 1961, 31, 33-37.

Mierzwa, J. A. The differentiation of career choices: A study of the choice of a career in science during a two-year period in late adolescence. Interim Report No. Four, Scientific Careers Study, 1961.

Occupational Guide. Sacramento, Calif. Department of Employment, State of California.

Occupational Outlook Handbook. Washington, D. C. : United States Department of Labor, 1961.

Roe, Anne. A psychological study of eminent biologists. Psychological Monographs, 1951, 65 (14). (a)

Roe, Anne. A psychological study of physical scientists. Genetic Psychology Monographs, 1951, 431, 121-239. (b)

Roe, Anne. A psychological study of psychologists and anthropologists. Psychological Monographs, 1953, 67 (2).

Roe, Anne. Personality structure and occupational behavior. In Henry Borow (Ed.) Man in a world at work. Boston: Houghton Mifflin, 1964. Pp. 196-214.

Samler, J. Occupational exploration in counseling: A proposed re-orientation. In Henry Borow (Ed.) Man in a world at work. Boston: Houghton Mifflin, 1964. Pp. 411-433.

Schreiber, D. (Ed.). Guidance and the school dropout. Washington, D. C.: National Education Association, 1964.

Strong, E. K. Jr. *Vocational interests of men and women*. Stanford Univ. Press, 1943.

Strong E. K., Jr. An 18-year longitudinal report on interests. In *The Strong Vocational Interest Blank: Research and Uses*. Minneapolis: Univer. of Minn. Press, 1960.

Super, D. E., & Bachrach, P. B. *Scientific careers and vocational development theory*. New York: Teachers College, Columbia University, 1957.

Thoresen, C. E. An experimental comparison of counseling techniques for producing information-seeking behavior. Unpublished doctoral dissertation, Stanford, Calif.: Stanford Univ. Press, 1964.

Thorndike, E. L. *Adult interests*. New York: The Macmillan Co., 1935.

Tyler, Leona E. The relationship of interests to abilities and reputation among first grade children. *Educational and Psychological Measurements*, 1951, 11, 255-264.

Tyler, Leona E. The development of vocational interests: The organization of likes and dislikes in 10-year old children. *Journal of Genetic Psychology*, 1955, 86, 33-44.

Tyler, Leona E. Distinctive patterns of likes and dislikes over a 22-year period. *Journal of Counseling Psychology*, 1959, 6, 234-237.

Uzzell, O. Influencers of occupational choice. *Personnel and Guidance Journal*, 1961, 39, 666-689.

Warren, Phyllis Ann. Vocational interests and the occupational adjustment of college. *Journal of Counseling Psychology*, 1959, 6, 140-147.

White, Becky J. The relationship of self concept and parental identification of women's vocational interests. *Journal of Counseling Psychology*, 1959, 6, 202-206.

APPENDIX A

FORMS USED IN CRITERION MEASURES

A-1 Student Reaction Sheet

A-2 Vocational Planning Questionnaire

A-3 High School Vocational Survey

A-4 Post Card

APPENDIX A-1

STUDENT REACTION SHEET

NAME________________________________

The following questions are about the red-covered booklet that you responded to one week ago. Circle the number of the statement that comes closest to your reaction to the booklet you worked on.

1. To what extent would you like to work on another booklet written in the same manner as the one you worked on one week ago?
   5. I would like to work on a similar booklet very much.
   4. I would like to work on a similar booklet a little.
   3. It doesn't make much difference to me.
   2. I don't think I would like to work on a similar booklet.
   1. I definitely do not want to work on a similar booklet.

2. To what extent would you like to explore a number of different occupations?
   4. I would like to explore many different occupations.
   3. I've narrowed my choice to about three occupations.
   2. I've narrowed my choice to two occupations.
   1. There's only one occupation that I want to find out more about.

3. Do you now know better exactly what people in a certain occupation do?
   5. Yes, I know much better what people do in a certain occupation.
   4. Yes, a little better.
   3. About the same.
   2. No, a little less.
   1. No, I know much less about what people do in a certain occupation.

4. Did you find that you had to change some of your ideas about what people in a particular occupation do?
   3. Yes, very much changed some of my ideas.
   2. Yes, a little.
   1. No, not at all.

Student Reaction Sheet (cont.)

5. Are you now more certain than before that you could be successful in an occupation?

    5. Yes, much more certain that I could be successful.
    4. Yes, a little more.
    3. About the same.
    2. No, a little less.
    1. No, much less certain now that I could be successful.

6. Do you now know better what it would feel like to work at a particular occupation?

    5. Yes, much better idea of how it would feel to work at a particular job.
    4. Yes, a little better.
    3. About the same.
    2. No, a little less.
    1. No, much less certain than before how it would feel to work at a a particular job.

7. Do you now know better exactly what would be expected of you on a job?

    5. Yes, much better idea now of what would be expected of me.
    4. Yes, a little better.
    3. About the same.
    2. No, a little less certain.
    1. No, much less certain than before of what would be expected of me.

8. Do you feel that you know better now what you yourself would enjoy and be good at in an occupation?

    5. Yes, much better idea of what I would enjoy and be good at.
    4. Yes, a little better.
    3. About the same.
    2. No, a little less well.
    1. No, much poorer idea of what I would enjoy and be good at.

APPENDIX A-2

VOCATIONAL PLANNING QUESTIONNAIRE

NAME ______________________________

1. During the past seven days how much time have you spent talking about your possible future occupations?

☐ None

☐ 1-10 minutes

☐ 10-20 minutes

☐ 20-30 minutes

☐ 30-40 minutes

☐ 40-50 minutes

☐ 50-60 minutes

☐ More than one hour

1a. If you checked "None," explain what your career plans are: __________

____

____

____

1b. If you did talk with some persons about possible occupations, check who they were below and give their names:

☐ My friend(s): ______________________________

☐ My parent(s): ______________________________

☐ My relative(s): ______________________________

☐ My teacher(s) : ______________________________

☐ My counselor(s): ______________________________

☐ Other(s): ______________________________

2. Did you mail the post card requesting information about occupations?

☐ Yes. ☐ No.

3. During the past seven days have you written anywhere else for occupational information?

☐ Yes. ☐ No.

3a. If you answered "No," explain what kind of information you would like to have:

____

____

____

3b. If you answered "Yes," tell what you requested (the kind of information and/or whom you wrote to):

____

____

____

4. During the past seven days have you read any books or pamphlets about any jobs or about choosing an occupation?

☐ Yes. ☐ No.

4a. If you answered "No," tell what kind of books or pamphlets would be most helpful to you.

____

____

____

4b. If you answered "Yes," tell what you can remember about one thing you read.

Its title was something like ______________________________

____

I obtained it (Where?) ______________________________

____

5. Realistically, when it comes to choosing a job I will (Check what you really will do.)

☐ wait until I'm about ready to start a job and then take the best job I can find.

☐ find out soon what the opportunities are for me in various occupations.

APPENDIX A-3

HIGH SCHOOL VOCATIONAL SURVEY NAME ____________________ DATE______

This is a survey to find out what you think about certain jobs. The check list is for research and is confidential. It will not become part of your school record. Please be honest in answering the questions.

Below is a short list of jobs and vocations. For each job do two things.

(1) Check the square to best describe how much you would like to work at that job.

(2) Check the square to describe how sure you are of your answer.

(1) How much would you like to be a:						(2) How sure are you of your answer?				
	VERY MUCH	QUITE A BIT	SOME	VERY LITTLE	NOT AT ALL	POSITIVE	VERY SURE	FAIRLY SURE	NOT VERY SURE	NOT SURE AT ALL
Scientist										
Bank Teller										
Accountant										
X-Ray Technician										
Insurance Agent										
Nurse										
Writer of Advertising										
Medical Laboratory Technologist										
Office Worker										
Sales Manager										
Doctor										
Office Manager										
Salesman/ Saleswoman										
Hospital Orderly										
Dental Assistant										

APPENDIX A-4

POST CARD

Please send me information about the jobs I have checked.
(Do not check more than three jobs.)

Scientist _____
Bank teller_____
Accountant_____
X-ray technician _____
Insurance agent _____
Nurse _____
Writer of advertising___

Medical lab. technologist _____
Office worker _____
Sales Manager _____
Doctor _____

Office manager _____
Salesman/Saleswoman___
Hospital orderly _____
Dental assistant____

My Name: _____________________
Address: _____________________
____

APPRENDIX B

CELL MEANS AND REPLICATIONS PER CELL FOR THE PROBLEM-SOLVING TREATMENT VS. NON-PROBLEM-SOLVING CONTROL

B-1	Table XXXV A	Cell Means of the Principal Experimental Variables for Responses to the Student Reaction Sheet Items for the Problem Solving Treatment and the Non-Problem Solving Control
	Table XXXV B	Cell Means for Responses to the Student Reaction Sheet Items for the Problem Solving Treatment and Non-Problem Solving Control
	Table XXXV C	Number of Replications Per Cell for the Student Reaction Sheet Items for the Problem Solving Treatment and the Non-Problem Solving Control
B-2	Table XXXVI A	Cell Means of the Principal Experimental Variables for Responses to the Vocational Planning Questionnaire Items for the Problem Solving Treatment and Non-Problem Solving Control
	Table XXXVI B	Cell Means for Responses to the Vocational Planning Questionnaire Items for the Problem Solving Treatment and Non-Problem Solving Control
	Table XXXVI C	Number of Replications Per Cell for the Vocational Planning Questionnaire Items for the Problem Solving Treatment and Non-Problem Solving Control
B-3	Table XXXVII	Number of Replications Per Cell for Directional and Absolute Changes in Interest Ratings for the Problem Solving Treatment and Non-Problem Solving Control
	Table XXXVIII A	Cell Means for Directional Change in Interest Ratings for Medical Laboratory Technology in the Problem Solving Treatment and Non-Problem Solving Control

APPENDIX

B-3 Table XXXVIII B Cell Means for Directional Change in Interest Ratings for Medical X-Ray Technology in the Problem Solving Treatment and Non-Problem Solving Control

Table XXXVIII C Cell Means for Directional Change in Interest Ratings for Sales In the Problem Solving Treatment and Non-Problem Solving Control

B-4 Table XXXIX A Cell Means for Absolute Change in Interest Ratings for Medical Laboratory Technologist in Problem Solving Treatment and Non-Problem Solving Control

Table XXXIX B Cell Means for Absolute Change in Interest Ratings for Medical X-Ray Technology in Problem Solving Treatment and Non-Problem Solving Control

Table XXXIX C Cell Means for Absolute Change in Interest Ratings for Sales in the Problem Solving Treatment and Non-Problem Solving Control

B-5 Table XXXX A Cell Means of the Principal Experimental Variables for Certainty Changes in Interest Ratings in the Problem Solving Treatment and Non-Problem Solving Control

Table XXXX B Cell Means for Certainty Changes in Interest Ratings in the Problem Solving Treatment and Non-Problem Solving Control

Table XXXX C Number of Replications Per Cell for Certainty Changes in Interest Ratings in the Problem Solving Treatment and the Non-Problem Solving Control

APPENDIX B-1

TABLE XXXV A

CELL MEANS OF THE PRINCIPAL EXPERIMENTAL VARIABLES FOR RESPONSES TO THE STUDENT REACTION SHEET ITEMS FOR THE PROBLEM SOLVING TREATMENT AND THE NON-PROBLEM SOLVING CONTROL

	1	2	3	4	5	6	7	8
MID SES	3.33	3.13	3.89	1.64	3.66	3.81	3.76	3.62
LOW SES	3.75	3.00	3.74	1.78	3.54	3.96	4.11	3.84
BOYS	3.24	2.96	3.76	1.65	3.74	3.81	3.73	3.60
GIRLS	3.18	2.70	3.17	1.61	2.86	3.15	3.01	3.09
PROB SOLV	3.84	3.14	3.84	1.72	3.55	4.06	4.04	3.76
NON PROB SOLV	3.20	3.01	3.80	1.68	3.66	3.69	3.80	3.67
MED LAB	3.83	3.18	4.00	1.77	3.46	4.03	3.89	3.74
X RAY	3.49	3.07	3.92	1.73	3.46	3.90	4.00	3.84
SALES	3.22	2.98	3.54	1.59	3.42	3.69	3.85	3.55

APPENDIX B-1

TABLE XXXV B

CELL MEANS FOR RESPONSES TO THE STUDENT REACTION SHEET ITEMS FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8
MID	BOYS	PROB SOLV	MED LAB	4.07	3.30	4.07	1.46	3.30	4.23	3.61	3.53
			X RAY	2.84	2.61	4.00	1.69	3.53	4.15	4.07	3.84
			SALES	3.15	2.76	3.69	1.53	3.53	3.69	3.61	3.50
		NON PROB	MED LAB	3.07	3.07	4.21	1.78	3.15	3.71	3.42	3.64
			X RAY	2.00	3.07	3.46	1.53	3.06	3.06	3.26	3.46
			SALES	3.00	2.69	3.38	1.33	3.00	3.53	3.23	3.07
	GIRLS	PROB SOLV	MED LAB	4.47	3.47	3.94	1.88	3.58	4.23	4.05	4.00
			X RAY	3.75	3.25	4.16	1.83	3.45	4.08	4.41	3.83
			SALES	3.41	3.09	3.91	1.66	3.75	3.91	4.08	3.66
		NON PROB	MED LAB	3.26	3.26	4.13	1.66	3.20	3.86	3.73	3.46
			X RAY	3.57	3.47	4.14	1.85	3.71	3.78	4.00	3.85
			SALES	3.28	3.42	3.64	1.35	3.42	3.50	3.71	3.50
LOW	BOYS	PROB SOLV	MED LAB	4.57	3.16	4.28	1.85	4.14	4.42	4.14	3.71
			X RAY	3.90	3.40	3.70	1.80	3.50	4.20	4.00	3.60
			SALES	3.20	2.40	3.00	1.60	3.20	3.80	4.20	4.20
		NON PROB	MED LAB	3.15	2.76	3.84	1.84	3.61	3.84	4.00	3.76
			X RAY	4.12	3.12	3.62	1.85	3.30	3.87	4.25	4.00
			SALES	2.83	3.20	3.40	1.83	3.88	3.66	4.00	3.33
	GIRLS	PROB SOLV	MED LAB	4.00	3.43	3.56	1.80	3.62	3.93	4.12	3.68
			X RAY	4.71	3.14	4.07	1.85	3.76	4.35	4.21	4.14
			SALES	3.68	3.10	3.57	1.68	3.36	3.84	4.21	3.63
		NON PROB	MED LAB	4.55	2.66	4.22	2.00	3.16	4.33	4.22	4.33
			X RAY	3.53	2.61	4.07	1.53	3.61	3.84	4.07	4.07
			SALES	2.87	2.81	3.37	1.81	3.31	3.62	3.93	3.78

APPENDIX B-1

TABLE XXXV C

NUMBER OF REPLICATIONS PER CELL FOR THE STUDENT REACTION SHEET ITEMS FOR THE PROBLEM SOLVING TREATMENT AND THE NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8
MID	BOYS	PROB SOLV	MED LAB	13	13	13	13	13	13	13	13
			X RAY	13	13	13	13	13	13	13	13
			SALES	13	13	13	13	13	13	13	12
		NON PROB	MED LAB	14	13	14	14	13	14	14	14
			X RAY	15	14	15	15	15	15	15	15
			SALES	13	13	13	12	13	13	13	13
	GIRLS	PROB SOLV	MED LAB	17	17	17	17	17	17	17	17
			X RAY	12	12	12	12	11	12	12	12
			SALES	12	11	12	12	12	12	12	12
		NON PROB	MED LAB	15	15	15	15	15	15	15	15
			X RAY	14	14	14	14	14	14	14	14
			SALES	14	14	14	14	14	14	14	14
LOW	BOYS	PROB SOLV	MED LAB	7	6	7	7	7	7	7	7
			X RAY	10	10	10	10	8	10	10	10
			SALES	5	5	5	5	5	5	5	5
		NON PROB	MED LAB	13	13	13	13	13	13	13	13
			X RAY	8	8	8	7	10	8	8	7
			SALES	6	5	5	6	9	6	6	6
	GIRLS	PROB SOLV	MED LAB	15	16	16	15	16	16	16	16
			X RAY	14	14	14	14	13	14	14	14
			SALES	19	19	19	19	19	19	19	19
		NON PROB	MED LAB	9	9	9	9	6	9	9	9
			X RAY	13	13	13	13	13	13	13	13
			SALES	16	16	16	16	16	16	15	14

APPENDIX B-2

TABLE XXXVI A

CELL MEANS OF THE PRINCIPAL EXPERIMENTAL VARIABLES FOR RESPONSES TO THE VOCATIONAL PLANNING QUESTIONNAIRE ITEMS FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
MID SES	3.15	.42	.57	.11	.11	.15	.10	1.18	1.02	.05	1.44	1.87
LOW SES	3.71	.60	.59	.23	.05	.04	.08	1.35	1.06	.12	1.26	1.89
BOYS	3.14	.34	.51	.14	.08	.15	.07	1.17	1.03	.04	1.51	1.85
GIRLS	2.97	.65	.67	.20	.09	.07	.11	1.32	1.05	.12	1.23	1.75
PROB SOLV	3.59	.51	.60	.20	.09	.11	.12	1.31	1.07	.14	1.51	1.88
NON PROB SOLV	3.22	.48	.56	.13	.07	.09	.06	1.20	1.01	.01	1.21	1.87
MED LAB	3.13	.49	.55	.14	.05	.12	.09	1.24	1.04	.08	1.25	1.84
X RAY	3.65	.59	.60	.17	.05	.09	.12	1.30	1.01	.13	1.25	1.90
SALES	3.45	.42	.58	.19	.15	.08	.05	1.24	1.03	.03	1.22	1.88

APPENDIX B-2

TABLE XXXVI B

CELL MEANS FOR RESPONSES TO THE VOCATIONAL PLANNING QUESTIONNAIRE ITEMS FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
MID	BOYS	PROB SOLV	MED LAB	2.84	.23	.38	0	.07	.38	.07	1.07	1.07	.07	1.15	1.76
			X RAY	2.23	.23	.46	.15	0	.15	0	1.16	1.00	0	1.00	1.76
			SALES	3.61	.15	.53	.23	.23	.15	.15	1.07	1.00	0	1.15	2.00
		NON PROB	MED LAB	2.92	.50	.57	.07	.07	.35	.07	1.07	1.00	0	1.21	1.83
			X RAY	3.66	.46	.60	.06	.06	.06	.13	1.06	1.00	0	1.14	1.85
			SALES	3.61	.08	.54	.09	.18	.27	0	1.30	1.00	0	1.23	1.83
	GIRLS	PROB SOLV	MED LAB	2.93	.56	.53	0	.06	0	.20	1.23	1.00	0	1.37	2.00
			X RAY	3.33	.53	.66	.41	.25	.16	.50	1.16	1.08	.41	1.33	2.00
			SALES	3.75	.60	.70	.20	.20	.20	0	1.33	1.00	0	1.25	1.83
		NON PROB	MED LAB	2.40	.26	.60	0	.06	.06	0	1.26	1.00	0	1.13	1.86
			X RAY	3.57	.78	.71	.07	.07	.14	.07	1.28	1.14	.14	1.35	1.92
			SALES	3.07	.57	.57	.14	.14	0	0	1.21	1.00	0	1.07	1.78
LOW	BOYS	PROB SOLV	MED LAB	4.71	.57	.71	.28	0	0	.14	1.42	1.28	.42	1.28	1.42
			X RAY	4.25	.62	.62	.37	0	.12	0	1.33	1.11	.11	1.11	2.00
			SALES	3.00	.40	.60	.20	.20	0	0	1.40	1.00	0	2.20	2.00
		NON PROB	MED LAB	2.53	.46	.53	.15	.07	0	.15	1.15	1.00	0	1.23	1.91
			X RAY	2.37	.37	.25	.25	0	0	0	1.25	1.00	0	1.12	2.00
			SALES	2.16	.16	.33	0	.16	0	0	1.00	1.00	0	1.16	2.00
	GIRLS	PROB SOLV	MED LAB	3.50	.62	.43	.31	.06	.06	.06	1.37	1.06	.25	1.18	1.87
			X RAY	5.21	.85	.85	.07	0	.07	.07	1.71	1.14	.35	1.28	1.91
			SALES	4.00	.68	.78	.26	.10	0	.10	1.50	1.15	.15	1.21	1.89
		NON PROB	MED LAB	4.44	.88	.88	.44	0	.11	0	1.44	1.00	0	1.55	1.88
			X RAY	4.15	.76	.53	.15	0	0	.15	1.38	1.00	0	1.30	1.91
			SALES	3.25	.43	.43	.25	.06	.06	.06	1.06	1.00	0	1.12	1.87

APPENDIX B-2

TABLE XXXVI C

NUMBER OF REPLICATIONS PER CELL FOR THE VOCATIONAL PLANNING QUESTIONNAIRE ITEMS FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
MID	BOYS	PROB SOLV	MED LAB	13	13	13	13	13	13	13	13	13	13	13	13
			X RAY	13	13	13	13	13	13	13	12	13	13	13	13
			SALES	13	13	13	13	13	13	13	13	11	13	13	12
		NON PROB	MED LAB	14	14	14	14	14	14	14	14	14	14	14	12
			X RAY	15	15	15	15	15	15	15	15	15	15	14	14
			SALES	13	12	11	11	11	11	11	13	13	13	13	12
	GIRLS	PROB SOLV	MED LAB	16	16	15	15	15	15	15	17	17	17	16	16
			X RAY	12	13	12	12	12	12	12	12	12	12	12	13
			SALES	12	10	10	10	10	10	10	12	12	12	12	12
		NON PROB	MED LAB	15	15	15	15	15	15	15	15	15	15	15	15
			X RAY	14	14	14	14	14	14	14	14	14	14	14	14
			SALES	14	14	14	14	14	14	14	14	14	14	14	14
LOW	BOYS	PROB SOLV	MED LAB	7	7	7	7	7	7	7	7	7	7	7	7
			X RAY	8	8	8	8	8	8	8	9	9	9	9	9
			SALES	5	5	5	5	5	5	5	5	5	5	5	5
		NON PROB	MED LAB	13	13	13	13	13	13	13	13	13	13	13	12
			X RAY	8	8	8	8	8	8	8	8	8	8	8	7
			SALES	6	6	6	6	6	6	6	6	6	6	6	5
	GIRLS	PROB SOLV	MED LAB	16	16	16	16	16	16	16	16	16	16	16	16
			X RAY	14	14	14	14	14	14	14	14	14	14	14	12
			SALES	19	19	19	19	19	20	19	18	19	19	19	19
		NON PROB	MED LAB	9	9	9	9	9	9	9	9	9	9	9	9
			X RAY	13	13	13	13	13	13	13	13	13	13	13	12
			SALES	16	16	16	16	16	16	16	16	16	16	16	16

APPENDIX B-3

TABLE XXXVII

NUMBER OF REPLICATIONS PER CELL FOR DIRECTIONAL AND ABSOLUTE CHANGES IN INTEREST RATINGS FOR THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	MED LAB ALL CELLS	X RAY ALL CELLS	SALES ALL CELLS
MID	BOYS	PROB SOLV	13	13	13
		NON PROB SOLV	14	15	13
	GIRLS	PROB SOLV	15	12	11
		NON PROB SOLV	13	14	13
LOW	BOYS	PROB SOLV	7	9	5
		NON PROB SOLV	10	7	6
	GIRLS	PROB SOLV	13	12	15
		NON PROB SOLV	9	10	13

APPENDIX B-3

TABLE XXXVIII A

CELL MEANS FOR DIRECTIONAL CHANGE IN INTEREST RATINGS FOR MEDICAL LABORATORY TECHNOLOGY IN THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	-05*	20	14	12	-09	-09	0	27	18	02	11	-16	02	14	-02
		LOW SES	0	10	16	20	13	05	-07	30	-23	13	-15	-02	08	10	03
		BOYS	02	20	23	11	05	09	09	-02	-18	0	-07	-16	11	16	-02
		GIRLS	-08	12	08	20	-04	-14	-14	56	-22	12	06	-06	-02	10	02
		PROB SOLV	-08	23	12	27	02	-08	02	35	-16	10	0	-02	04	10	02
		NON PROB SOLV	02	08	17	04	-02	02	-09	21	-24	02	0	-19	04	15	-02
MID	BOYS	PROB SOLV	23	46	30	53	-07	0	23	15	0	-15	30	0	07	30	30
		NON PROB SOLV	-07	07	-07	-28	-14	14	0	14	-35	-07	-07	-42	21	21	0
	GIRLS	PROB SOLV	-53	20	13	13	0	-40	0	53	-20	20	13	0	-06	-06	-20
		NON PROB SOLV	23	07	23	15	-15	-07	-23	23	-15	07	07	-23	-15	-15	-15
LOW	BOYS	PROB SOLV	0	14	14	-42	14	0	-14	-42	-42	14	-71	0	0	0	-42
		NON PROB SOLV	-10	10	60	50	40	-20	20	-20	0	20	-10	-10	10	0	-20
	GIRLS	PROB SOLV	07	07	-07	53	07	15	-07	76	-15	23	-07	-07	15	15	23
		NON PROB SOLV	0	11	0	-11	-11	-22	-33	77	-44	-11	11	11	0	22	33

* Decimals omitted

APPENDIX B-3

TABLE XXXVIII B

CELL MEANS FOR DIRECTIONAL CHANGE IN INTEREST RATINGS FOR MEDICAL X-RAY TECHNOLOGY IN THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	13*	17	05	35	07	04	20	-14	-03	27	0	-02	22	0	10
		LOW SES	-37	05	0	55	-08	-21	0	-03	-06	-508	-05	-21	10	-05	08
		BOYS	0	20	05	22	09	09	27	-09	-04	13	02	-11	22	07	19
		GIRLS	-15	05	02	62	-06	-21	-02	-10	-04	-384	-06	-08	12	-10	02
		PROB SOLV	-15	-04	-09	63	-06	-17	0	-04	0	-409	02	-22	23	13	05
		NON PROB SOLV	0	28	15	24	09	04	24	-15	-09	21	-07	02	11	-17	13
SES	SEX	TREATMENT															
MID	BOYS	PROB SOLV	15	0	-23	23	0	15	30	-07	-07	23	30	-38	30	15	53
		NON PROB SOLV	0	26	-06	06	20	20	33	-26	-06	26	-40	-06	13	-13	13
	GIRLS	PROB SOLV	25	-16	08	66	0	08	33	-16	08	33	16	33	33	33	0
		NON PROB SOLV	14	50	42	50	07	-28	-14	-07	-07	28	0	07	14	28	07
LOW	BOYS	PROB SOLV	-33	22	44	44	-11	-33	-33	0	-22	-33	11	-22	22	33	11
		NON PROB SOLV	14	42	28	28	28	28	85	14	28	28	28	42	28	0	28
	GIRLS	PROB SOLV	-75	-16	-50	1.16	-16	-66	-41	08	16	-16	-50	-58	08	-25	-08
		NON PROB SOLV	-30	-10	0	10	-20	10	20	-30	-40	0	10	-20	-10	-20	10

* Decimals omitted

APPENDIX B-3

TABLE XXXVIII C

CELL MEANS FOR DIRECTIONAL CHANGE IN INTEREST RATINGS FOR SALES IN THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	06*	16	08	03	02	12	-03	-06	06	-08	-06	-08	11	-08	-10
		LOW SES	-07	-10	08	-24	-03	-05	08	12	-12	-15	-17	-08	20	-30	0
		BOYS	05	-03	03	-01	-11	05	01	11	-03	-13	-05	-16	18	-14	-18
		GIRLS	-03	09	12	-15	07	04	03	-04	-02	-09	-15	-02	13	-21	04
		PROB SOLV	05	13	18	-16	-02	-05	12	-02	-13	-09	-22	-11	25	-06	05
		NON PROB SOLV	-04	-05	-02	-02	02	13	-08	06	09	-13	0	-04	06	-29	-15
MID	BOYS	PROB SOLV	23	15	15	07	15	07	-15	-07	07	-07	-07	-07	30	-15	-15
		NON PROB SOLV	0	15	15	-07	-15	38	38	15	15	0	07	-07	07	07	-07
	GIRLS	PROB SOLV	09	27	27	09	09	-18	-27	-18	-18	-27	-36	-27	0	09	0
		NON PROB SOLV	-07	07	-07	23	15	23	-23	-23	23	0	07	07	07	-30	-15
LOW	BOYS	PROB SOLV	-20	-40	-20	-40	-40	0	60	0	-60	20	-20	-40	40	-20	-40
		NON PROB SOLV	0	-50	0	-50	0	-50	16	33	0	-83	-16	-33	0	-50	-33
	GIRLS	PROB SOLV	-06	20	40	-06	0	0	-13	06	-06	-06	-26	06	33	-06	40
		NON PROB SOLV	-07	-15	-15	30	-07	-07	15	15	-07	-07	-07	0	07	-53	-15

* Decimals omitted

APPENDIX B-4

TABLE XXXIX A

CELL MEANS FOR ABSOLUTE CHANGE IN INTEREST RATINGS FOR MEDICAL LABORATORY TECHNOLOGIST IN PROBLEM SOLVING TREATMENT AND NON PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	67*	42	36	52	41	27	43	52	65	67	50	56	32	43	38
		LOW SES	30	46	51	51	59	35	48	82	43	69	46	64	54	56	79
		BOYS	52	48	50	61	59	13	49	43	63	72	56	61	22	56	47
		GIRLS	51	40	36	44	39	46	42	84	50	64	42	57	58	41	62
		PROB SOLV	41	43	37	60	51	25	43	69	54	77	37	60	44	56	47
		NON PROB SOLV	63	43	48	43	45	37	47	61	58	58	60	58	39	41	63
MID	BOYS	PROB SOLV	53	46	46	84	53	15	53	61	92	1.07	30	76	53	76	30
		NON PROB SOLV	78	50	50	57	42	14	28	71	50	50	78	42	35	21	28
	GIRLS	PROB SOLV	80	33	26	40	26	40	40	80	60	60	40	53	33	46	33
		NON PROB SOLV	53	38	23	30	46	38	53	53	61	53	53	53	61	30	61
LOW	BOYS	PROB SOLV	0	42	42	42	1.00	0	42	1.00	42	42	71	57	57	28	71
		NON PROB SOLV	50	50	60	50	60	20	80	20	60	80	50	70	10	1.00	80
	GIRLS	PROB SOLV	07	53	38	69	53	30	38	1.07	15	84	23	53	92	61	69
		NON PROB SOLV	66	33	66	33	33	88	33	1.00	66	55	55	77	44	22	1.00

* Decimals omitted

APPENDIX B-4

TABLE XXXIX B

CELL MEANS FOR ABSOLUTE CHANGE IN INTEREST RATINGS FOR MEDICAL X-RAY TECHNOLOGY IN PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	35*	50	50	79	48	44	53	57	39	53	33	86	44	47	44
		LOW SES	52	58	63	86	45	47	68	39	52	60	57	68	52	42	51
		BOYS	27	52	40	68	45	36	50	38	31	59	43	84	50	49	42
		GIRLS	56	54	69	95	48	54	68	60	57	54	43	75	45	42	51
		PROB SOLV	54	47	61	84	45	47	48	37	37	60	40	82	45	42	38
		NON PROB SOLV	30	58	50	80	47	43	71	63	51	52	45	75	50	49	55
MID	BOYS	PROB SOLV	30	46	53	84	61	15	30	53	38	53	46	1.00	46	76	69
		NON PROB SOLV	26	66	20	60	33	20	73	93	60	53	80	86	53	80	53
	GIRLS	PROB SOLV	58	16	25	66	16	25	50	83	58	50	33	66	33	33	50
		NON PROB SOLV	28	64	1.00	1.07	78	71	85	50	35	57	14	92	42	71	50
LOW	BOYS	PROB SOLV	33	44	66	66	55	33	55	0	66	77	55	88	44	55	55
		NON PROB SOLV	14	42	28	57	28	28	85	42	57	57	28	42	57	28	57
	GIRLS	PROB SOLV	91	83	1.00	1.16	50	66	91	58	50	66	50	75	58	25	41
		NON PROB SOLV	50	50	40	90	40	50	40	50	80	40	50	60	50	40	50

* Decimals omitted

APPENDIX B-4

TABLE XXXIX C

CELL MEANS FOR ABSOLUTE CHANGE IN INTEREST RATINGS FOR SALES IN THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	30*	40	24	47	25	30	49	48	67	39	38	47	48	63	38
		LOW SES	43	41	54	46	33	36	77	43	53	51	43	43	46	66	56
		BOYS	27	46	29	41	27	24	56	46	64	40	38	37	52	56	46
		GIRLS	42	36	42	51	31	38	65	46	59	48	42	51	44	71	46
		PROB SOLV	36	45	41	52	38	29	72	45	61	32	45	47	48	52	50
		NON PROB SOLV	35	35	33	42	20	35	51	46	62	57	35	44	46	77	42
MID	BOYS	PROB SOLV	23	46	15	38	15	07	46	38	53	07	38	38	46	30	46
		NON PROB SOLV	30	46	15	38	30	38	53	46	92	46	23	38	38	84	38
	GIRLS	PROB SOLV	45	63	45	81	45	36	63	54	90	27	54	63	54	81	36
		NON PROB SOLV	23	07	23	38	15	38	38	53	38	76	38	53	53	61	30
LOW	BOYS	PROB SOLV	20	40	60	40	80	0	60	40	60	20	60	40	40	20	40
		NON PROB SOLV	33	50	66	50	0	50	83	66	33	1.16	50	33	1.00	83	66
	GIRLS	PROB SOLV	46	33	53	46	40	53	1.06	46	46	60	40	46	46	60	66
		NON PROB SOLV	53	46	46	46	23	23	46	30	69	23	38	46	23	84	46

* Decimals omitted

APPENDIX B-5

TABLE XXXX A

CELL MEANS OF THE PRINCIPAL EXPERIMENTAL VARIABLES FOR CERTAINTY CHANGES IN INTEREST RATINGS IN THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MID SES	57*	51	54	52	51	32	54	52	50	43	44	49	45	48	45
LOW SES	54	52	59	66	53	65	61	76	77	67	75	76	64	60	71
BOYS	64	57	59	62	61	47	64	70	74	59	75	74	64	64	53
GIRLS	50	48	53	58	45	46	52	59	54	50	41	52	43	46	58
PROB SOLV	54	43	50	58	41	37	53	64	41	46	45	55	36	53	50
NON PROB SOLV	57	60	61	57	61	55	60	63	83	61	68	66	70	54	60
MED LAB	53	66	75	57	52	55	59	54	90	50	57	77	54	65	62
X RAY	69	43	40	66	62	53	62	79	47	66	35	57	46	46	54
SALES	45	41	51	53	42	23	45	57	50	44	68	49	57	66	48

* Decimals omitted

APPENDIX B-5

TABLE XXXX B

CELL MEANS FOR CERTAINTY CHANGES IN INTEREST RATINGS IN THE PROBLEM SOLVING TREATMENT AND NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MID	BOYS	PROB SOLV	MED LAB	57*	37	57	40	71	09	50	16	0	33	55	66	14	50	27
			X RAY	77	57	37	83	57	18	66	57	25	28	62	75	22	20	33
			SALES	27	28	54	37	27	25	25	50	11	25	37	44	83	1.10	25
		NON PROB	MED LAB	66	1.14	85	1.00	87	58	1.20	66	1.14	87	62	1.11	90	54	90
			X RAY	36	66	50	37	63	30	28	40	28	54	42	33	33	0	0
			SALES	77	37	75	75	66	09	28	71	40	62	70	44	50	16	50
	GIRLS	PROB SOLV	MED LAB	16	54	42	33	27	22	33	16	71	11	66	25	09	77	50
			X RAY	1.20	30	33	57	36	22	50	1.20	14	57	12	40	25	50	62
			SALES	66	0	16	40	16	28	80	16	33	55	0	16	42	0	71
		NON PROB	MED LAB	75	50	81	55	55	88	37	1.00	1.12	25	37	62	50	55	28
			X RAY	60	66	0	40	60	42	50	85	64	57	16	50	33	40	44
			SALES	40	66	50	25	54	44	60	0	66	20	50	14	71	1.37	60
LOW	BOYS	PROB SOLV	MED LAB	85	1.50	1.50	1.50	25	1.00	1.50	4.00	1.20	1.50	1.66	1.50	1.00	1.00	1.33
			X RAY	1.14	40	25	50	1.75	1.28	1.00	1.33	1.50	1.20	80	2.00	33	83	80
			SALES	75	0	0	0	0	0	0	0	66	0	1.00	0	0	0	0
		NON PROB	MED LAB	83	1.00	1.00	50	1.00	1.50	40	62	1.80	80	1.00	1.25	1.33	2.00	1.75
			X RAY	50	0	20	1.33	20	83	50	25	66	25	33	25	1.66	80	1.00
			SALES	50	50	0	0	33	0	1.00	1.66	1.75	1.00	2.25	1.20	1.00	0	25
	GIRLS	PROB SOLV	MED LAB	25	50	87	25	33	50	37	40	36	33	18	57	11	33	37
			X RAY	20	66	75	50	28	57	50	50	33	85	16	33	66	30	87
			SALES	22	33	25	1.22	30	12	0	80	11	14	33	77	33	37	28
		NON PROB	MED LAB	25	33	20	50	0	0	28	0	1.00	20	50	66	40	0	50
			X RAY	1.00	20	50	1.33	1.16	1.20	1.00	80	50	1.16	1.50	1.00	83	83	80
			SALES	28	87	87	50	60	40	66	89	66	80	1.16	62	70	85	77

---

* Decimals omitted

APPENDIX B-5

TABLE XXXX C

NUMBER OF REPLICATIONS PER CELL FOR CERTAINTY CHANGES IN INTEREST RATINGS IN THE PROBLEM SOLVING TREATMENT AND THE NON-PROBLEM SOLVING CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MID	BOYS	PROB SOLV	MED LAB	7	8	7	5	7	11	6	6	3	3	9	6	7	6	11
			X RAY	9	7	8	6	7	11	9	7	8	7	8	4	9	5	6
			SALES	11	7	11	8	11	12	8	8	9	12	8	9	12	10	8
		NON PROB	MED LAB	6	7	7	7	8	12	10	6	7	8	8	9	10	11	10
			X RAY	11	6	12	8	11	13	7	5	7	11	7	6	9	7	10
			SALES	9	8	12	8	9	11	7	7	5	8	10	9	8	6	8
	GIRLS	PROB SOLV	MED LAB	6	11	7	9	11	9	9	6	7	9	9	8	11	9	10
			X RAY	5	10	9	7	11	9	6	5	7	7	8	5	8	8	8
			SALES	6	5	6	5	6	7	5	6	3	9	5	6	7	5	7
		NON PROB	MED LAB	8	8	11	9	9	9	8	7	8	8	8	8	8	9	7
			X RAY	10	6	2	5	5	7	6	7	9	7	12	4	9	5	9
			SALES	10	12	10	8	11	9	10	8	9	5	8	7	7	8	10
LOW	BOYS	PROB SOLV	MED LAB	7	4	4	4	4	7	4	1	5	4	3	4	4	5	3
			X RAY	7	5	5	4	4	7	5	9	4	5	5	2	6	6	5
			SALES	4	3	2	3	1	5	3	3	3	4	3	4	4	4	3
		NON PROB	MED LAB	6	5	5	6	5	8	5	8	5	5	5	4	9	5	4
			X RAY	6	4	5	3	5	6	2	4	3	4	3	4	3	5	4
			SALES	4	4	2	4	6	4	3	3	4	2	4	5	1	2	4
	GIRLS	PROB SOLV	MED LAB	12	8	8	8	6	10	8	5	11	6	11	7	9	6	8
			X RAY	5	3	4	2	7	7	4	6	6	7	6	6	6	10	8
			SALES	9	12	8	9	10	8	3	10	9	7	9	9	9	8	7
		NON PROB	MED LAB	4	6	5	6	4	4	7	5	6	5	6	6	5	7	2
			X RAY	5	5	6	3	6	5	6	5	4	6	4	4	6	6	5
			SALES	7	5	8	10	10	10	9	9	6	10	6	8	10	7	9

APPENDIX C

CELL MEANS AND REPLICATIONS PER CELL FOR THE PROBLEM-SOLVING TREATMENT VS. OCCUPATIONAL INFORMATION CONTROL

C-1	Table XXXXI A	Cell Means of the Principal Experimental Variables for Responses to the Student Reaction Sheet Items for the Problem Solving Treatment and Occupational Information Control
	Table XXXXI B	Cell Means for Responses to the Student Reaction Sheet Items for the Problem Solving Treatment and Occupational Information Control
	Table XXXXI C	Number of Replications Per Cell for the Student Reaction Sheet Items for the Problem Solving Treatment and Occupational Information Control
C-2	Table XXXXII A	Cell Means of the Principal Experimental Variables for Responses to the Vocational Planning Questionnaire Items for the Problem Solving Treatment and Occupational Information Control
	Table XXXXII B	Cell Means for Responses to the Vocational Planning Questionnaire Items for the Problem Solving Treatment and Occupational Information Control
	Table XXXXII C	Number of Replications Per Cell for the Vocational Planning Questionnaire Items for the Problem Solving Treatment and Occupational Information Control
C-3	Table XXXXIII	Number of Replications Per Cell for Directional and Absolute Changes in Interest Ratings for the Problem Solving Treatment and Occupational Information Control
	Table XXXXIV A	Cell Means for Directional Change in Interest Ratings for Medical Laboratory Technology in the Problem Solving Treatment and Occupational Information Control
	Table XXXXIV B	Cell Means for Directional Change in Interest Ratings for Medical X-Ray Technology in the Problem Solving Treatment and Occupational Information Control

APPENDIX

C-3	Table XXXXIV C	Cell Means for Directional Change in Interest Ratings for Sales in the Problem Solving Treatment and Occupational Information Control
C-4	Table XXXXV A	Cell Means for Absolute Change in Interest Ratings for Medical Laboratory Technology in Problem Solving Treatment and Occupational Information Control
	Table XXXXV B	Cell Means for Absolute Change in Interest Ratings for Medical X-Ray Technology in Problem Solving Treatment and Occupational Information Control
	Table XXXXV C	Cell Means for Absolute Change in Interest Ratings for Sales in Problem Solving Treatment and Occupational Information Control
C-5	Table XXXXVI A	Cell Means of the Principal Experimental Variables for Certainty Changes in Interest Ratings in the Problem Solving Treatment and Occupational Information Control
	Table XXXXVI B	Cell Means for Certainty Changes in Interest Ratings in the Problem Solving Treatment and Occupational Information Control
	Table XXXXVI C	Number of Replications Per Cell for Certainty Changes in Interest Ratings in the Problem Solving Treatment and the Occupational Information Control

APPENDIX C-1

TABLE XXXXI A

CELL MEANS OF THE PRINCIPAL EXPERIMENTAL VARIABLES FOR RESPONSES TO THE STUDENT REACTION SHEET ITEMS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

	1	2	3	4	5	6	7	8
MID SES	3.09	3.09	3.82	1.59	3.37	3.79	3.85	3.63
LOW SES	3.76	3.10	3.74	1.81	3.60	4.00	4.08	3.96
BOYS	3.25	3.06	3.72	1.57	3.40	3.82	3.76	3.68
GIRLS	3.04	2.85	3.41	1.69	3.17	3.49	3.62	3.42
PROB SOLV	3.84	3.14	3.84	1.72	3.55	4.06	4.06	3.76
OCC INFO	2.96	3.05	3.73	1.66	3.39	3.71	3.85	3.80
MED LAB	3.58	3.25	3.76	1.71	3.45	3.94	3.85	3.74
X RAY	3.36	2.92	3.87	1.71	3.49	4.01	4.09	3.89
SALES	3.10	3.09	3.72	1.65	3.47	3.71	3.92	3.72

APPENDIX C-1

TABLE XXXXI B

CELL MEANS FOR RESPONSES TO THE STUDENT REACTION SHEET ITEMS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8
MID	BOYS	PROB SOLV	MED LAB	4.07	3.30	4.07	1.46	3.30	4.23	3.61	3.53
			X RAY	2.84	2.61	4.00	1.69	3.53	4.15	4.07	3.84
			SALES	3.15	2.76	3.69	1.53	3.53	3.69	3.61	3.50
		OCC INFO	MED LAB	2.84	3.41	3.69	1.23	3.00	3.46	3.41	3.00
			X RAY	3.07	2.53	3.07	1.53	3.30	3.46	3.53	3.53
			SALES	2.25	3.50	3.66	1.33	3.16	3.33	3.41	3.50
	GIRLS	PROB SOLV	MED LAB	4.47	3.47	3.94	1.88	3.58	4.23	4.05	4.00
			X RAY	3.75	3.25	4.16	1.83	3.45	4.08	4.41	3.33
			SALES	3.41	3.09	3.91	1.66	3.75	3.91	4.08	3.66
		OCC INFO	MED LAB	1.92	3.14	3.57	1.46	3.14	3.42	3.57	3.35
			X RAY	3.12	2.93	4.06	1.56	3.18	3.75	4.12	3.68
			SALES	2.30	3.05	3.95	1.75	3.45	3.75	4.05	3.89
LOW	BOYS	PROB SOLV	MED LAB	4.57	3.16	4.28	1.85	4.14	4.42	4.14	3.71
			X RAY	3.90	3.40	3.70	1.80	3.50	4.20	4.00	3.60
			SALES	3.20	2.40	3.00	1.60	3.20	3.80	4.20	4.20
		OCC INFO	MED LAB	3.00	3.12	3.50	1.87	3.57	3.85	3.71	4.28
			X RAY	3.50	2.91	3.91	1.66	3.25	3.75	4.00	4.16
			SALES	3.18	3.37	3.81	1.62	3.56	3.81	3.87	3.87
	GIRLS	PROB SOLV	MED LAB	4.00	3.43	3.56	1.80	3.62	3.93	4.12	3.68
			X RAY	4.71	3.14	4.07	1.85	3.76	4.35	4.21	4.14
			SALES	3.68	3.10	3.57	1.68	3.36	3.84	4.21	3.63
		OCC INFO	MED LAB	3.84	2.84	3.69	2.23	3.61	4.15	4.15	4.53
			X RAY	3.20	2.70	3.90	1.80	4.10	4.50	4.40	4.40
			SALES	4.25	3.00	3.62	2.12	3.71	3.44	3.87	3.75

APPENDIX C-1

TABLE XXXXI C

NUMBER OF REPLICATIONS PER CELL FOR THE STUDENT REACTION SHEET ITEMS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SEX	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8
MID	BOYS	PROB SOLV	MED LAB	13	13	13	13	13	13	13	13
			X RAY	13	13	13	13	13	13	13	13
			SALES	13	13	13	13	13	13	13	12
		OCC INFO	MED LAB	13	12	13	13	13	13	12	12
			X RAY	13	13	13	13	13	13	13	13
			SALES	12	12	12	12	12	12	12	12
	GIRLS	PROB SOLV	MED LAB	17	17	17	17	17	17	17	17
			X RAY	12	12	12	12	11	12	12	12
			SALES	12	11	12	12	12	12	12	12
		OCC INFO	MED LAB	14	14	14	13	13	14	14	14
			X RAY	16	16	16	16	16	16	16	16
			SALES	20	20	20	20	20	20	20	19
LOW	BOYS	PROB SOLV	MED LAB	7	6	7	7	7	7	7	7
			X RAY	10	10	10	10	8	10	10	10
			SALES	5	5	5	5	5	5	5	5
		OCC INFO	MED LAB	8	8	8	8	7	7	7	7
			X RAY	12	12	12	12	12	12	12	12
			SALES	16	16	16	16	16	16	16	16
	GIRLS	PROB SOLV	MED LAB	15	16	16	15	16	16	16	16
			X RAY	14	14	14	14	13	14	14	14
			SALES	19	19	19	19	19	19	19	19
		OCC INFO	MED LAB	13	13	13	13	13	13	13	13
			X RAY	10	10	10	10	10	10	10	10
			SALES	8	8	8	8	7	9	8	8

APPENDIX C-2

TABLE XXXXII A

CELL MEANS OF THE PRINCIPAL EXPERIMENTAL VARIABLES FOR RESPONSES TO THE VOCATIONAL PLANNING QUESTIONNAIRE ITEMS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
MID SES	3.20	.41	.55	.12	.10	.10	.15	1.22	1.03	.04	1.17	1.88
LOW SES	3.92	.55	.67	.25	.06	.06	.12	2.44	1.11	.18	1.28	1.86
BOYS	3.23	.33	.53	.16	.07	.10	.12	1.24	1.06	.07	1.19	1.85
GIRLS	3.24	.60	.67	.20	.10	.07	.15	1.19	1.07	.14	1.23	1.79
PROB SOLV	3.59	.51	.60	.20	.09	.11	.12	1.29	1.07	.14	1.24	1.88
OCC INFO	3.46	.44	.60	.17	.08	.06	.15	2.24	1.06	.06	1.21	1.85
MED LAB	3.40	.52	.57	.14	.06	.09	.13	1.26	1.06	.11	1.22	1.86
X RAY	3.64	.50	.63	.21	.07	.10	.14	1.34	1.09	.13	1.23	1.86
SALES	3.52	.41	.61	.20	.12	.06	.13	1.28	1.05	.07	1.22	1.83

APPENDIX C-2

TABLE XXXXII B

CELL MEANS FOR RESPONSES TO THE VOCATIONAL PLANNING QUESTIONNAIRE ITEMS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
MID	BOYS	PROB SOLV	MED LAB	2.84	.23	.38	0	.07	.38	.07	1.07	1.07	.07	1.15	1.76
				2.23	.23	.46	.15	0	.15	0	1.30	1.00	0	1.00	1.76
				3.61	.15	.53	.23	.23	.15	.15	1.07	1.00	0	1.15	2.00
		OCC INFO	MED LAB	2.53	.38	.38	.07	.07	0	.15	1.38	1.00	0	1.07	1.91
			X RAY	4.08	.53	.50	.25	.16	.08	.08	1.16	1.08	0	1.09	1.90
			SALES	2.41	.30	.50	0	.08	0	.25	1.16	1.00	0	1.00	2.00
	GIRLS	PROB SOLV	MED LAB	2.93	.56	.53	0	.06	0	.20	1.23	1.00	0	1.37	2.00
			X RAY	3.33	.53	.66	.41	.25	.16	.50	1.16	1.08	.41	1.33	2.00
			SALES	3.75	.60	.70	.20	.20	.20	0	1.33	1.00	0	1.25	1.83
		OCC INFO	MED LAB	3.64	.64	.78	0	.07	0	.07	1.21	1.00	0	1.28	1.85
			X RAY	3.56	.37	.68	.12	0	.06	.12	1.43	1.12	.06	1.31	1.81
			SALES	3.40	.40	.50	.10	.10	.05	.15	1.15	1.00	0	1.10	1.78
LOW	BOYS	PROB SOLV	MED LAB	4.71	.57	.71	.28	0	0	.14	1.42	1.28	.42	1.28	1.42
			X RAY	4.25	.62	.62	.37	0	.12	0	1.33	1.11	.11	1.11	2.00
			SALES	3.00	.40	.60	.20	.20	0	0	1.40	1.00	0	2.20	2.00
		OCC INFO	MED LAB	3.37	.37	.75	.25	0	.25	.12	1.00	1.12	.12	1.25	1.75
			X RAY	3.00	.27	.54	.09	.09	0	.27	1.25	1.08	0	1.36	1.81
			SALES	3.60	.20	.60	.18	0	0	.13	1.18	1.06	.18	1.25	1.81
	GIRLS	PROB SOLV	MED LAB	3.50	.62	.43	.31	.06	.06	.06	1.37	1.06	.25	1.18	1.87
			X RAY	5.21	.85	.85	.07	0	.07	.07	1.71	1.14	.35	1.28	1.91
			SALES	4.00	.68	.78	.26	.10	0	.10	1.50	1.15	.15	1.21	1.89
		OCC INFO	MED LAB	4.38	.69	.76	.30	.07	.07	.23	1.38	1.15	.15	1.25	1.92
			X RAY	3.60	.60	.70	.30	.10	.20	.10	1.30	1.10	.10	1.40	1.80
			SALES	4.00	.55	.66	.55	.22	.11	.22	1.66	1.11	.22	1.22	2.00

APPENDIX C-2

TABLE XXXXII C

NUMBER OF REPLICATIONS PER CELL FOR THE VOCATIONAL PLANNING QUESTIONNAIRE ITEMS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	1B-1	1B-2	1B-3	1B-4	1B-5	1B-6	2	3	3B	4	5
MID	BOYS	PROB SOLV	MED LAB	13	13	13	13	13	13	13	13	13	13	13	13
			X RAY	13	13	13	13	13	13	13	13	13	13	13	13
			SALES	13	13	13	13	13	13	13	13	11	13	13	12
		OCC INFO	MED LAB	13	13	13	13	13	13	13	13	13	13	13	12
			X RAY	12	13	12	12	12	12	12	12	12	11	11	11
			SALES	12	13	12	12	12	12	12	12	13	12	11	10
	GIRLS	PROB SOLV	MED LAB	16	16	15	15	15	15	15	17	17	17	16	16
			X RAY	12	13	12	12	12	12	12	12	12	12	12	13
			SALES	12	10	10	10	10	10	10	12	12	12	12	12
		OCC INFO	MED LAB	14	14	14	14	14	14	14	14	14	14	14	14
			X RAY	16	16	16	16	16	16	16	16	16	15	16	16
			SALES	20	20	20	20	20	20	20	19	19	19	20	19
LOW	BOYS	PROB SOLV	MED LAB	7	7	7	7	7	7	7	7	7	7	7	7
			X RAY	8	8	8	8	8	8	8	9	9	9	9	9
			SALES	5	5	5	5	5	5	5	5	5	5	5	5
		OCC INFO	MED LAB	8	8	8	8	8	8	8	8	8	8	8	8
			X RAY	12	11	11	11	11	11	11	12	12	11	11	11
			SALES	15	15	15	16	15	15	15	16	16	16	16	16
	GIRLS	PROB SOLV	MED LAB	16	16	16	16	16	16	16	16	16	16	16	16
			X RAY	14	14	14	14	14	14	14	14	14	14	14	12
			SALES	19	19	19	19	19	20	19	18	19	19	19	19
		OCC INFO	MED LAB	13	13	13	13	13	13	13	13	13	13	12	13
			X RAY	10	10	10	10	10	10	10	10	10	10	10	10
			SALES	9	9	9	9	9	9	9	9	9	9	9	9

APPENDIX C-3

TABLE XXXXIII

NUMBER OF REPLICATIONS PER CELL FOR DIRECTIONAL AND ABSOLUTE CHANGES IN INTEREST RATINGS FOR THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	MED LAB ALL CELLS	X RAY ALL CELLS	SALES ALL CELLS
MID	BOYS	PROB SOLV	13	13	13
		OCC INFO	13	13	12
	GIRLS	PROB SOLV	15	12	11
		OCC INFO	13	15	19
LOW	BOYS	PROB SOLV	7	9	9
		OCC INFO	7	8	16
	GIRLS	PROB SOLV	13	12	15
		OCC INFO	13	10	6

APPENDIX C-3

TABLE XXXXIV A

CELL MEANS FOR DIRECTIONAL CHANGE IN INTEREST RATINGS FOR MEDICAL LABORATORY TECHNOLOGY IN THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	-02*	27	14	02	-02	-17	13	06	-13	0	07	-05	-04	-14	0
		LOW SES	-03	02	0	17	-03	-05	-24	37	-24	-03	-10	-12	12	-02	10
		BOYS	07	25	07	-10	03	07	05	-02	-12	-20	0	-02	-10	-02	0
		GIRLS	-09	11	09	22	-06	-26	-09	35	-22	13	0	-13	13	-14	07
		PROB SOLV	-08	23	12	27	02	-08	06	35	-16	10	0	-02	04	10	02
		OCC INFO	04	10	04	-11	-06	-15	-13	02	-19	-13	0	-15	02	-30	06
SES	SEX	TREATMENT															
MID	BOYS	PROB SOLV	23	46	30	53	-07	0	23	15	0	-15	30	0	07	30	30
		OCC INFO	15	38	07	-30	0	23	30	-15	-07	-15	07	-07	-38	-30	-07
	GIRLS	PROB SOLV	-53	20	13	13	0	-40	0	53	-20	20	13	0	-06	-06	-20
		OCC INFO	15	07	07	-30	0	-46	0	-38	-23	07	-23	-15	23	-53	0
LOW	BOYS	PROB SOLV	0	14	14	-42	14	0	-14	-42	-42	14	-71	0	0	0	-42
		OCC INFO	-28	-28	-42	-57	14	0	-85	28	-14	-71	0	0	0	-14	0
	GIRLS	PROB SOLV	07	07	-07	53	07	15	-07	76	-15	23	-07	-07	15	15	23
		OCC INFO	0	07	23	53	-30	-30	-30	46	-30	0	15	-30	23	-15	30

* Decimals omitted

APPENDIX C-3

TABLE XXXXIV B

CELL MEANS FOR DIRECTIONAL CHANGE IN INTEREST RATINGS FOR MEDICAL X-RAY TECHNOLOGY IN THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	05*	-04	-04	26	11	-02	22	-07	-02	17	02	0	19	15	-02
		LOW SES	21	10	-03	66	-05	-23	-36	05	-10	-23	-26	-41	18	13	-08
		BOYS	-09	05	09	27	-09	02	-09	-02	-16	-16	02	-19	25	28	18
		GIRLS	30	0	-14	57	16	-22	04	-02	04	15	-20	-16	12	02	-24
		PROB SOLV	24	-04	-09	63	-06	-17	0	-04	0	04	02	-22	23	13	15
		OCC INFO	0	09	02	24	15	-04	-04	0	-11	-04	-21	-13	13	15	-24
SES	SEX	TREATMENT															
MID	BOYS	PROB SOLV	15	0	-23	23	0	15	30	-07	-07	23	30	-38	30	15	53
		OCC INFO	-23	-30	07	30	-23	-07	-07	07	-23	-23	-30	30	23	15	-23
	GIRLS	PROB SOLV	25	-16	08	66	0	08	33	-16	08	33	16	33	33	33	0
		OCC INFO	06	26	-06	-06	60	-20	33	-13	13	33	-06	-20	-06	0	-33
LOW	BOYS	PROB SOLV	-33	22	44	44	-11	-33	-33	0	-22	-33	11	-22	22	33	11
		OCC INFO	0	50	25	12	0	37	50	-12	-12	-50	0	-62	25	62	37
	GIRLS	PROB SOLV	75	-16	-50	16	-16	-66	-41	08	16	-16	-50	-58	08	-25	-08
		OCC INFO	20	0	-10	70	10	-10	-20	20	-30	0	-50	-20	20	0	-60

*Decimals omitted

APPENDIX C-3

TABLE XXXXIV C

CELL MEANS FOR DIRECTIONAL CHANGE IN INTEREST RATINGS FOR SALES IN THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	11*	09	18	05	05	12	-03	-07	-07	0	-07	-16	18	-10	-05
		LOW SES	-02	19	41	-10	06	-09	-15	04	-08	-10	02	-11	45	-04	0
		BOYS	08	14	34	-12	06	0	-10	-08	-02	-10	06	-26	37	-12	-10
		GIRLS	02	14	23	08	06	-06	-08	04	-13	0	-12	-02	23	-04	04
		PROB SOLV	04	12	25	-02	02	-02	-08	-04	-10	-08	-20	-10	23	-06	04
		OCC INFOR	05	15	32	-02	09	-04	-09	0	-06	-02	13	-17	37	-09	-09
SES	SEX	TREATMENT															
MID	BOYS	PROB SOLV	23	15	15	07	15	07	-15	-07	07	-07	-07	-07	30	-15	-15
		OCC INFO	08	0	41	-25	-08	0	25	-16	16	16	0	-25	16	-16	-08
	GIRLS	PROB SOLV	09	27	27	09	09	-18	-27	-18	-18	-27	-36	-27	0	09	0
		OCC INFO	05	0	0	21	05	10	0	05	-26	10	05	-10	21	-15	0
LOW	BOYS	PROB SOLV	-11	-22	-11	-22	-22	0	33	0	-33	11	-11	-22	22	-11	-22
		OCC INFO	06	43	56	-12	25	-06	-56	-06	-06	-43	31	-43	68	-06	0
	GIRLS	PROB SOLV	-06	20	40	-06	0	0	-13	06	-06	-06	-26	06	33	-06	40
		OCC INFO	0	16	50	0	16	-50	16	33	16	33	16	50	50	16	-66

* Decimals omitted

APPENDIX C-4

TABLE XXXXV A

CELL MEANS FOR ABSOLUTE CHANGE IN INTEREST RATINGS FOR MEDICAL LABORATORY TECHNOLOGY IN PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	46*	42	33	57	31	39	46	61	53	73	29	57	40	59	37
		LOW SES	32	52	49	87	67	34	55	92	34	72	40	57	72	52	55
		BOYS	37	55	47	74	57	17	69	72	57	84	35	62	54	47	35
		GIRLS	42	40	35	66	38	51	35	75	36	64	33	53	53	62	52
		PROB SOLV	41	43	37	60	51	25	43	85	54	77	37	60	58	56	47
		OCC INFO	39	50	43	80	41	49	56	62	36	69	30	54	50	56	41
MID	BOYS	PROB SOLV	53	46	46	84	53	15	53	61	92	1.07	30	76	53	76	30
		OCC INFO	15	69	53	76	30	38	76	61	23	76	23	53	53	46	38
	GIRLS	PROB SOLV	80	33	26	40	26	40	40	80	60	60	40	53	33	46	33
		OCC INFO	30	23	07	30	15	61	15	38	38	53	23	46	23	69	46
LOW	BOYS	PROB SOLV	0	42	42	42	1.00	0	42	1.00	42	42	71	57	57	28	71
		OCC INFO	85	57	42	85	71	0	1.14	85	71	1.00	28	57	57	14	0
	GIRLS	PROB SOLV	07	53	38	69	53	30	38	1.07	15	84	23	53	92	61	69
		OCC INFO	46	53	69	1.30	61	76	46	76	30	61	46	61	69	76	61

* Decimals omitted

APPENDIX C-4

TABLE XXXXV B

CELL MEANS FOR ABSOLUTE CHANGE IN INTEREST RATINGS FOR MEDICAL X-RAY TECHNOLOGY IN PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	43*	41	30	86	60	24	38	63	47	54	36	64	49	45	47
		LOW SES	46	56	69	71	46	48	66	46	61	59	51	71	54	43	53
		BOYS	37	56	41	74	65	25	37	48	58	58	30	79	49	65	46
		GIRLS	51	40	51	85	45	43	61	63	49	55	53	57	53	26	53
		PROB SOLV	54	47	61	84	45	34	48	52	52	60	32	82	45	47	54
		OCC INFO	34	48	32	76	63	35	52	60	54	52	52	52	56	41	45
MID	BOYS	PROB SOLV	30	46	53	84	61	15	30	53	38	53	46	1.00	46	76	69
		OCC INFO	53	61	07	1.07	69	23	38	53	53	38	46	46	23	46	23
	GIRLS	PROB SOLV	58	16	25	66	16	25	50	83	58	50	33	66	33	33	50
		OCC INFO	33	40	33	86	86	33	60	66	40	73	60	46	86	26	46
LOW	BOYS	PROB SOLV	33	44	66	66	55	33	55	0	66	77	55	88	44	55	55
		OCC INFO	25	75	50	12	75	37	75	87	87	75	25	87	1.00	87	37
	GIRLS	PROB SOLV	91	83	1.00	1.16	50	66	91	58	50	66	50	75	58	25	41
		OCC INFO	20	20	50	70	10	50	40	40	50	20	70	40	20	20	80

*Decimals omitted

APPENDIX C-4

TABLE XXXXV C

CELL MEANS FOR ABSOLUTE CHANGE IN INTEREST RATINGS FOR SALES IN PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MID SES	36*	49	27	56	30	34	58	36	54	32	40	63	47	54	45
		LOW SES	32	37	47	54	45	34	71	47	38	63	54	62	49	52	74
		BOYS	28	38	24	36	38	16	54	44	45	49	41	62	46	36	58
		GIRLS	41	49	49	74	37	52	74	39	48	43	51	64	50	70	58
		PROB SOLV	33	41	37	47	35	27	66	41	56	29	41	43	43	48	45
		OCC INFO	35	45	35	62	39	41	62	41	39	62	50	81	52	58	69
MID	BOYS	PROB SOLV	23	46	15	38	15	07	46	38	53	07	38	38	46	30	46
		OCC INFO	41	16	41	25	25	33	58	50	50	66	16	75	33	33	41
	GIRLS	PROB SOLV	45	63	45	81	45	36	63	54	90	27	54	63	54	81	36
		OCC INFO	36	63	52	73	36	52	63	15	36	31	47	73	52	68	52
LOW	BOYS	PROB SOLV	11	22	33	22	44	0	33	22	33	11	33	22	22	11	22
		OCC INFO	31	56	56	50	62	18	68	56	43	93	68	93	68	56	1.00
	GIRLS	PROB SOLV	46	33	53	46	40	53	1.06	46	46	60	40	46	46	60	66
		OCC INFO	33	16	83	1.33	16	83	50	66	16	66	83	83	50	83	1.00

* Decimals omitted

APPENDIX C-5

TABLE XXXXVI A

CELL MEANS OF THE PRINCIPAL EXPERIMENTAL VARIABLES FOR CERTAINTY CHANGES IN INTEREST RATINGS IN THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MID SES	52*	37	41	46	36	22	56	42	33	38	35	35	33	45	42
LOW SES	61	51	61	81	57	56	66	82	50	79	73	65	47	48	60
BOYS	68	49	50	59	61	38	65	59	46	56	52	50	44	55	42
GIRLS	47	40	46	60	31	34	55	56	38	52	47	44	33	39	56
PROB SOLV	54	43	50	58	41	37	53	64	41	46	45	55	36	53	50
OCC INFO	48	43	46	63	47	36	66	53	39	62	55	39	42	38	48
MID LAB	47	44	49	46	33	35	61	48	46	65	68	44	29	52	57
X RAY	79	38	50	44	52	47	64	71	43	69	36	47	29	40	51
SALES	44	46	45	75	48	27	54	54	32	27	44	51	56	47	37

* Decimals omitted

APPENDIX C-5

TABLE XXXXVI B

CELL MEANS FOR CERTAINTY CHANGES IN INTEREST RATINGS IN THE PROBLEM SOLVING TREATMENT AND OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MID	BOYS	PROB SOLV	MED LAB	57*	37	57	40	71	09	50	16	0	33	55	66	14	50	27
			X RAY	77	57	37	83	57	18	66	57	25	28	62	75	22	20	33
			SALES	27	28	54	37	27	25	25	50	11	25	37	44	83	1.10	25
		OCC INFO	MED LAB	45	0	25	0	55	11	66	50	27	57	80	28	14	14	22
			X RAY	75	16	33	0	42	10	75	44	28	77	30	12	28	14	30
			SALES	57	60	50	88	88	16	71	33	57	0	30	20	66	28	37
	GIRLS	PROB SOLV	MED LAB	16	54	42	33	27	22	33	16	71	11	66	25	09	77	50
			X RAY	1.20	30	33	57	36	22	50	1.20	14	57	12	40	25	50	62
			SALES	57	0	16	40	16	28	80	16	33	55	0	16	42	0	71
		OCC INFO	MED LAB	60	30	16	40	18	50	81	55	33	33	10	22	20	33	88
			X RAY	50	50	60	20	22	30	50	25	50	37	11	44	33	54	11
			SALES	25	41	63	75	07	33	30	37	30	30	16	50	20	25	50
LOW	BOYS	PROB SOLV	MED LAB	85	1.50	1.50	1.50	25	1.00	1.50	4.00	1.20	1.50	1.66	1.50	1.00	1.00	1.33
			X RAY	1.14	40	25	50	1.75	1.28	1.00	1.33	1.50	1.20	80	2.00	33	83	80
			SALES	75	0	0	0	0	0	0	0	66	0	1.00	0	0	0	0
		OCC INFO	MED LAB	50	50	20	33	0	28	0	0	33	1.50	0	25	40	83	71
			X RAY	1.00	0	1.25	28	1.00	1.33	0	0	33	1.00	33	50	0	0	83
			SALES	75	1.14	62	55	70	35	88	77	55	33	33	60	70	77	20
	GIRLS	PROB SOLV	MED LAB	25	50	87	25	33	50	37	40	36	33	18	57	11	33	37
			X RAY	20	66	75	50	28	57	50	50	33	85	16	33	66	30	87
			SALES	22	33	25	1.22	30	12	0	80	11	14	33	77	33	37	28
		OCC INFO	MED LAB	50	16	50	1.00	16	25	57	80	50	1.50	1.90	28	83	20	1.00
			X RAY	88	37	60	66	55	33	85	1.00	50	75	66	50	22	37	40
			SALES	25	60	0	4.00	1.60	2.00	1.33	1.66	20	1.33	2.00	4.00	1.66	0	33

* Decimals omitted

APPENDIX C-5

TABLE XXXXVI C

NUMBER OF REPLICATIONS PER CELL FOR CERTAINTY CHANGES IN INTEREST RATINGS IN THE PROBLEM SOLVING TREATMENT AND THE OCCUPATIONAL INFORMATION CONTROL

SES	SEX	TREATMENT	OCCUPATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MID	BOYS	PROB SOLV	MED LAB	7	8	7	5	7	11	6	6	3	3	9	6	7	6	11
			X RAY	9	7	8	6	7	11	9	7	8	7	8	4	9	5	6
			SALES	11	7	11	8	11	12	8	8	9	12	8	9	12	10	8
		OCC INFO	MED LAB	11	5	8	5	9	9	6	6	11	7	10	7	7	7	9
			X RAY	8	6	12	6	7	10	8	9	7	9	10	8	7	7	10
			SALES	7	10	8	9	9	6	7	6	7	5	10	5	9	7	8
	GIRLS	PROB SOLV	MED LAB	6	11	7	9	11	9	9	6	7	9	9	8	11	9	10
			X RAY	5	10	9	7	11	9	6	5	7	7	8	5	8	8	8
			SALES	7	5	6	5	6	7	5	6	3	9	5	6	7	5	7
		OCC INFO	MED LAB	10	10	12	10	11	6	11	9	9	6	10	9	10	6	9
			X RAY	10	10	10	5	9	10	8	8	10	8	9	9	6	11	9
			SALES	12	12	11	8	13	9	10	16	13	13	12	8	10	8	10
LOW	BOYS	PROB SOLV	MED LAB	7	4	4	4	4	7	4	1	5	4	3	4	4	5	3
			X RAY	7	5	4	4	4	7	5	9	4	5	5	2	6	6	5
			SALES	4	3	2	3	1	5	3	3	3	4	3	4	4	4	3
		OCC INFO	MED LAB	2	4	5	3	3	7	1	3	3	2	5	4	5	6	7
			X RAY	6	3	4	7	3	6	3	2	3	4	3	2	3	2	6
			SALES	12	7	8	9	10	14	9	9	9	6	9	5	10	9	5
	GIRLS	PROB SOLV	MED LAB	12	8	8	8	6	10	8	5	11	6	11	7	9	6	8
			X RAY	5	3	4	2	7	7	4	6	6	7	6	6	6	10	8
			SALES	9	12	8	9	10	8	3	10	9	7	9	9	9	8	7
		OCC INFO	MED LAB	10	6	6	4	6	4	7	5	10	6	10	7	6	5	6
			X RAY	9	8	5	6	9	6	7	6	6	8	6	6	9	8	5
			SALES	4	5	1	1	5	1	3	3	5	3	5	1	3	2	3

FILM-MEDIATED STUDY

CHAPTER I

PROBLEM STATEMENT, RATIONALE AND REVIEW OF LITERATURE

Through the 1940's and 1950's, the objectives of counseling theory and practice emphasized helping clients to achieve personal insight and to cope with their feelings related to their vocational plans and decisions. "In general, there was a devaluation of educational and vocational counseling and a corresponding increase in the value assigned to personal and emotional counseling" (Goldman, 1961, p. 7). The possible contributions of occupational and educational information to the counseling process were not emphasized during that period.

However, during the 1960's, there has been a resurgence of interest in educational and vocational counseling as distinguishable from this earlier dynamic or psychotherapeutic emphasis. Concomitant with this trend have been the attempts to conceptualize individual educational and vocational development from a decision theory framework. During this time period, one of the more scholarly discussions of decision theory was presented by Cronbach and Gleser (1957) from which meaningful counseling implications can be extrapolated, even though the authors concentrate on the utility of psychological testing for institutional rather than individual decisions. More specifically relevant to the counseling process is adoption by Gelatt (1962) of a decision-making frame of reference for counseling with specific attention given to the function of relevant and reliable information as a necessary, but not sufficient, determinant of accurate personal decisions.

This renascence of educational and vocational counseling coupled with the acceptance of the decision-making model is clearly reflected in the recommendations submitted by Wrenn (1962) as part of his report summarizing the findings of the American Personnel and Guidance Association's Commission on Guidance in American Schools. For example, he proposes:

> That primary emphasis in counseling students be placed on the developmental needs and decision points...with the major goal of counseling being that of increased self-responsibility and an increased maturity in decision-making upon the part of the student.... That vocational choice be seen as a process extending over years and not as an event; that the student be helped to make a series of choices as he becomes increasingly realistic about himself and the occupational world...(pp. 109-110).

If Wrenn's recommendations are accepted as indicative of prevalent counseling interests and endeavors, a basic counseling problem of determining effective procedures for facilitating students' educational and vocational decision-making evolves. Using the Cronbach and Gleser (1957) "schematic view of the decision process" (cf., 1957, Chapter 3), it is postulated that a counselor working within the decision-making setting could assist the client to develop reliable decision strategies within his evaluation system, to define and explore all available decision alternatives, to gather optimal amounts of information on each alternative and to make probability statements of the expected outcomes if certain alternatives were selected. In short, the role of the counselor would involve helping the student improve his decision-making skills in addition to serving as a resource agent who facilitates the client's exploratory and information-seeking responses. By way of illustration, testing could be employed within this setting only if both counselor and client mutually determined that it had incremental validity for the decision process -- i.e., that it would provide additional data not available from existing sources of information (cf., Goldman, 1961, p. 18; Cronbach & Gleser, 1957, Chapter 4). It is within this framework -- educational and vocational counseling within a decision-making setting -- that the reported investigation was conducted.

Just as this study concentrated on the alternative-exploration and information-gathering phases of the decision process, it is acknowledged that further research is necessary on other important phases. For example, Cronbach & Gleser (1957) call for more study of client's evaluation systems:

> An equally important determiner of the utility of the decision is whether the client brings to bear a consistent and fully acceptable value system. By 'fully acceptable', we mean fully acceptable to himself.... It seems worthwhile therefore to study how the client's evaluation system itself changes during counseling (p. 118).

PROBLEM STATEMENT AND RATIONALE

This investigation attempted to make contributions which would partially resolve two related problems existing in the field of educational and vocational counseling. The general problem involved is the blatant dearth of experimental research on vocational behavior. The other problem, one within the domain of the first, concerned the need for the innovation and evaluation of effective methods for stimulating students to explore educational and vocational opportunities available to them and for assisting them in their subsequent gathering of information. Since the first problem influenced interest in the second, they will be discussed in that order.

Fundamental Problem Area

Accompanying the renewed attention given to educational and vocational counseling during the 1960's has been extensive theorizing about career-choice developmental patterns but limited controlled experimentation has evolved from the resultant theories. More effort has been invested in uncontrolled observing of, and vague theorizing about, human vocational development than in determining successful methods for influencing such development.

Perhaps the most salient examples of recent research on career-choice patterns are the large-scale longitudinal and cross-sectional studies of the diverse human characteristics related to educational, vocational and personal development. Holland (1964) reviewed a number of research programs including longitudinal investigations such as Tiedeman's studies of career development (e.g., Tiedeman and O'Hara, 1963) and Super's Career Pattern Study (e.g., Super, 1960; Super *et al*., 1963). He also reviewed those using more of a cross-sectional research orientation including the Project TALENT study of American high school students (e.g., Flanagan *et al*., 1962, 1964), Roe's attempts to correlate personality characteristics with occupational choice (e.g., Roe, 1956, 1964), and Holland's own research on vocational behavior conducted through support of the National Merit Scholarship Corporation.

Generally, it has been accepted that the primary functions of these comprehensive research programs are that they contribute to the development and extension of theories of vocational development and that they augment the accumulation of awe-inspiring bodies of correlational data, as most poignantly symbolized by the Flanagan et al. (1964) recent, mammoth publication. These research programs undeniably have theory-building implications; in fact, the derived theories may have indirectly influenced the present investigation's emphasis on the adolescent stage of career-choice development by postulating adolescence as a developmental stage often characterized by career exploration and tentative career choice rather than a definitive career selection. For example, Super et al. (1957) refer to the years between 15 and 24 as the "exploration stage" of vocational development during which tentative and trial decisions are made concerning various occupational alternatives. These developmental concepts bear a distinct resemblance to similar ideas espoused by Ginzberg et al. (1957) in their theory of occupational choice.

At the same time, these research programs and their related theoretical expositions have encountered no little criticism. As a case in point, Wrenn (1959) takes exception to the lack of productive experimentation based on these theories.

> What troubles me is not the number or variety of theories intended to throw light upon the psychological nature of vocational choice, rather it is the lack of research sophistication implied. The value of a theory lies not only in its psychological or other rationale ...but in its capacity to generate research (p. 94).

Similarly, Holland (1964) after the aforementioned non-critical review of the various research programs, comments on the limited utility of these correlational studies which try to make the causal inference that vocational behavior is a function of personality, developmental and social background determinants. Rather apologetically, he adds that

> ...the magnitudes of the obtained relationships are often of little practical value.... From both a practical and a theoretical standpoint, the status of the field is uncertain, although current efforts promise much (p. 277). Theory is interesting, but it is only an academic exercise unless we can show that it is or it is not useful in research and practice. Burgeoning research promises to alleviate some of our empirical problems (p. 284).

Nevertheless, it is questionable just how much problem alleviation will occur if "burgeoning research" merely continues to be "more of the same." Beilin (1963) calls for a shift from naturalistic observation to laboratory and controlled field experimentation. Brayfield and Crites (1964) also extend their support to the greater use of the experimental method.

> Vocational guidance research has leaned heavily upon non-experimental methods. The determination of group difference and correlational analysis are the most frequently used methods, incorporated in designs which limit the inferences that can be made regarding causal or, more properly, functional relationships. There is a dearth of experimental field studies of occupational behavior.... There has been so little laboratory experimentation on vocational problems that we appear to appreciate neither its possibilities nor its limitations (p. 315).

Even though a major section of the research on career-choice patterns of development has been conducted through correlational designs, a small segment of experimental studies has emerged. These studies, discussed below, established a precedent for the reported investigation since they also attempted to develop and evaluate methods of assisting the alternative-exploration and information-gathering stages of individuals' educational and vocational decision-making processes. This segment of research conceivably is a partial resolution of the problematic "dearth of experimental field studies of occupational behavior" (Brayfield and Crites, 1964, p. 315).

As one of the initial experiments in this group of studies, Schroeder (1964; Krumboltz and Schroeder, 1965) investigated the relative effectiveness of two counseling procedures aimed at stimulating student subjects to explore educational and vocational opportunities. Based on social learning theory, these procedures, "reinforcement counseling" and "model-reinforcement counseling," were shown to be more effective than no counseling at all and indicated differential effectiveness with subjects separated by sex. The major criterion of treatment outcome was the frequency and variety of "information-seeking behavior" operationally defined as overt responses noted through a content analysis of counseling interview tapes as well as reported through individual interviews three weeks following treatment administration. The latter interview procedure was used in order to elicit self-reports of the information-seeking responses subjects recalled emitting during the preceding three-week period. Krumboltz and Thoresen (1964) and Thoresen (1964) reported on an experiment which improved and extended Schroeder's (1964) study primarily by including a pseudo-counseling control group and by contrasting the relative effectiveness of group and individual counseling procedures.

This basic approach -- attempting to motivate students to explore educational and vocational opportunities and then to assist them in gathering relevant information -- was replicated partially in the investigation reported here. However, specific media (i.e., films and printed booklets) were used in place of the personal counseling procedures as the motivational methods. Used once again was the criterion for evaluating treatment effectiveness by means of self-reported behaviors emitted subsequent to treatment administration.

In summary, the collective purpose of all of these related investigations, including the present, has been to study from a controlled experimental orientation the relative effectiveness of a variety of techniques and procedures developed to assist individuals in their educational and vocational decision-making and, consequently, to influence the development of their career-choice patterns. This segment of research contrasts sharply with traditional investigations such as those discussed above and has been conducted in an attempt at partially filling the experimental void left by the more renowned research programs.

Specific Problem Focus

More specifically, this investigation focused on the lack of effective, research-evaluated media designed to supplement individual and group procedures used in educational and vocational counseling settings. In effect, it involved the initiation, development, and comparative analysis of a series of motivational media conducive to the career counseling objective of assisting individual decision-making. The express purpose of these media is to stimulate students to explore educational and vocational opportunities available to them and to gather relevant information on the alternatives which interest them. The rationale for this investigation was derived in part from the decision-making model of counseling discussed in a previous section, and in part from the psychological research on exploratory behavior. A third segment of the rationale, that involving methodology basic to the instruments developed for this investigation, was derived from communication research and will be discussed in the next section of this chapter. At this time, it is necessary to expand the second part of the rationale since its importance in the investigation is critical. After it has been developed, its relationship to the experimental media created for this investigation will be specified thus providing a more concise description of the approach adopted in this investigation.

Vocational Exploratory Behavior. Inadequate research on the nature and role of exploratory behavior in vocational development has been identified as one of the unresolved research issues in vocational theory (cf., Super *et al*., 1961). However, one meaningful discussion of the vocational implications of experimental psychology's research on exploratory behavior is that presented by Jordaan (1963) who finds particularly constructive Berlyne's (1960) work relating levels of emotional arousal and curiosity responses. Jordaan centers his theoretical framework around the concept of "vocational exploratory behavior," a response pattern which he defined as including

> ...activities, mental or physical, undertaken with the more or less conscious purpose or hope of eliciting information about oneself or one's environment, or of verifying or arriving at a basis for a conclusion or hypothesis which will aid one in choosing, preparing for, entering, adjusting to, or progressing in, an occupation (1963, p. 59).

This concept as defined by Jordaan signifies the response pattern which is the dependent variable of experimental interest in this investigation. Subsequently the term "vocational exploratory behavior," hereafter referred to as "V.E.B.", will be used to identify all behavioral manifestations classifiable under the decision-making model described previously as exploring alternatives and gathering information for educational and vocational choices.

1. Berlyne's Theory of Exploratory Behavior. In the area of psychological theory, Berlyne (1960) postulates the existence of an exploratory drive aroused when the individual experiences perceptual or

conceptual conflict and reduced if resultant exploratory responses obtain additional information about some aspect of the environment. Conflict is the important determinant of exploratory drive induction but it is only when the induced level of emotional arousal exceeds an optimal point that the individual will emit exploratory responses in order to produce conflict resolution. Once emitted, exploratory behavior enables the individual to receive environmental information not previously available to him; this information is pertinent to the making of certain decisions which will resolve persisting conflicts. In an earlier article, Berlyne (1954a) speculates about the reasons why an individual finds unpleasant the excessive levels of arousal induced by conceptual conflict.

> Many writers have been showing that one of the most distressing plights for human beings is not to know or to understand a state of affairs particularly if it is important for their security or contrary to their expectations. One of society's most vital functions is to provide norms and frames of reference for the evaluation of new contingencies...uncertainty... is often more antagonizing than realistic anticipation of unpleasantness (p. 188).

Similarly, Fromm (1941) discusses the motivational implications of insecurity and powerlessness while Frankl (1963) builds an approach to psychotherapy around man's search for meaning.

It is not the concern of the writer whether or not drive induction-reduction postulates are necessary "to explain" the occurrence of exploratory responses. Hypothesizing the existence of an exploratory drive -- as in Harlow (1953), Montgomery (1954) and Berlyne (1960) -- seems to have little utility for the study of

V.E.B. On the other hand, of vital interest is research indicating that these responses do exist and are operationally identifiable, that it is possible to determine the discriminative and reinforcing stimuli which can elicit and maintain such response patterns, and that these stimulus-response contingencies can be demonstrated experimentally. Berlyne's theoretical discussions and consequent research have contributed to such non-speculative understanding of exploratory behavior in spite of the fact that many of his concepts are hypothetical constructs of questionable validity.

Berlyne (1954b, 1957) has attempted to identify experimentally some of the characteristics of discriminative stimuli which are capable of eliciting exploratory responses -- responses which, at that time, he called curiosity. Using pictorial presentation of congruous and incongruous stimulus patterns either on cards or by a tachistoscope, he found both that subjects had significantly longer reaction times (Berlyne, 1957) on the incongruous pictures (i.e., with characteristics the subjects had learned by past experience to regard as incompatible) and that they expressed more curiosity (Berlyne, 1954b) about them. The criterion for curiosity was subjects' responses on a questionnaire which asked them for which cards would they like more information. Besides incongruity, Berlyne (1960) has postulated that stimulus characteristics such as novelty, change, surprisingness, complexity and uncertainty have similar exploratory response-evoking capacities.

Within Berlyne's theory of exploratory behavior, it is the "epistemic" responses through which knowledge or information is acquired "rather than the relatively rudimentary orienting, locomotor, and investigatory responses of animals and very young children which are most likely to be crucial in vocational exploration" (Jordan, 1963, p. 43). Once again, Berlyne believes that stimulus conditions capable of eliciting epistemic exploratory behavior would possess some of these characteristics of novelty, unexpected change and uncertainty, or else would represent a perplexing problem such as the individual experiences when he perceives a gap in available information. The writer postulates that similar stimulus characteristics used in vocationally-relevant media can elicit V.E.B. in the same way Berlyne believes they influence epistemic exploratory behavior. Films are the media which will be investigated here.

These contributions of Berlyne and Jordaan form a major part of the theoretical rationale for this study, supplementing that part of the rationale based on the decision-making model presented in an earlier section. However, one addition must be pointed out. Berlyne believes that epistemic exploratory responses are emitted by the individual who recognizes a limitation in the nature or amount of knowledge he possesses about the environment around him, while in this investigation it is postulated that V.E.B. could lead to more adequate and appropriate knowledge of the person himself as well as his environment. Personal knowledge, perhaps as made available through testing, is a pertinent objective of counseling.

Jordaan develops his theory of vocational exploratory behavior in much greater detail than described here but much of his discussion occurs within the self-concept framework which is irrelevant to this investigation. However, his thoughts on issues such as "When is exploratory behavior vocational?", "Dimensions of exploratory behavior," and "Factors which facilitate, impede, or inhibit exploration" are all relevant and some of them will be considered in later sections of this dissertation.

2. Bruner's Exploration of Alternatives. Attention will be directed to one further reference presenting thoughts particularly germane to this discussion of the rationale underlying the concept of V.E.B. The "predisposition to explore alternatives" is described by Bruner (1964) as performing a particularly significant function in a theory of instruction. Once again, it is debatable whether it is necessary to refer to exploration as a mediational construct (e.g., predisposition, motive, drive or habit hierarchy) when it is probably much less speculative and demonstrably more useful to refer to exploration as a learned pattern of responses. Nevertheless, just as there was a concern in this investigation for the development of media capable of stimulating and maintaining responses identifiable as V.E.B., Bruner discusses the necessity in an instructional setting of being able to "facilitate and regulate the exploration of alternatives on the part of the learner" (1964, p. 309). Systematically, he analyzes exploration of alternatives into three components: activation, maintenance, and direction.

> The major condition for activating exploration of alternatives in a task is the presence of some optimal level of uncertainty.... The maintenance of exploration, once it has been activated, requires that the benefits from exploring alternatives exceed the risks incurred.... The appropriate direction of exploration depends upon two interactiing considerations: a sense of the goal of a task and a knowledge of the relevance of tested alternatives to the achievement of that goal (p. 309). (Underscoring mine.)

The specific focus of the investigation which will be reported encompassed the first of Bruner's three components -- facilitating or "activating exploration of alternatives."

Relative to this component, there is a distinguishable difference between exploratory behavior emitted in an instructional, teacher-supervised, problem-solving setting and V.E.B. displayed in an educational and vocational counseling setting. Except for this contrasting aspect, the activational interests of Bruner and this investigation appear identical. In Bruner's setting, the instructor traditionally selects the problem-solving task, assigns it to the student and expects him to explore among a discrete number of predetermined alternative solutions, some of which may lead to problem resolution.

By contrast, motivational techniques studied in this investigation do not impose a task on individuals and expect them to emit problem-solving responses. Rather, they attempt to motivate them to recognize the task -- i.e., making career decisions -- and to explore alternatives and gather information which will enable them to make the career decisions -- i.e., to arrive at a problem solution -- which are most satisfying for them. Here also the individuals are free to choose whether or not they will emit exploratory responses and it is not deemed advisable to force exploration. In this setting, there are no implicitly correct answers as there are for many instructional problems. When judgments are made about the adequacy of individual decisions,

> ...a particular decision must be evaluated on the basis of the expected outcome and its value for this individual...it is impossible for anyone save the decision maker himself to determine the 'correct' conclusion.... 'The correct course of action' can be defined only by the person whom the decision affects (Cronbach and Gleser, 1957, pp. 117-118).

Furthermore, there are almost unlimited alternatives available for each individual who engages in the problem of making career decisions. The counseling issue involved is to stimulate individuals to recognize both the importance of making wise personal decisions among their career alternatives, as well as the functional utility which various types of V.E.B. can have in this decision-making process.

3. Relevance for Present Investigation. In concluding this section, it seems imperative that a clearer statement be made relating the theoretical rationale of this investigation to the initiation, development, and comparative analysis of the series of motivational instruments studied. For this research project, three experimental films were created for the purpose of motivating viewers to emit V.E.B. following film presentation, while the actual research involved evaluating on a number of criteria the relative effectiveness of these three films as well as that of four other motivational

instruments -- two film and two printed booklet presentations -- used for control purposes.

Using Berlyne's (1960) postulates concerning the response-eliciting capacities of certain types of discriminative stimuli, the experimental films all involved problems encountered by employees in one occupational field. All three films have the same basic content; however the type of audience participation was carefully varied along a dimension running from passive participation, to active-covert participation and then to active-overt participation in the problems faced by the employees. Of these three films, the version which involved the greatest stimulus novelty and presented the most uncertainty through the perplexing problems posed for audience solution (viz., the version which elicited active-overt audience participation) was predicted to be more effective in motivating viewers to emit V.E.B. Procedurally, the two films which involve audience participation actually request that the viewers solve the problems depicted; it was anticipated that this problem-solving involvement, using either overt or covert responding, would have additional motivational implications, thus making these films more effective in eliciting V.E.B. than the non-participation film of similar content or any of the control media.

A sheet given to all subjects after they experienced the presentation of the media pointed out that even though the media may have involved information about one occupational field, other occupations could be studied in a similar manner. A list of suggestions was then given outlining -- using this one occupational field as an example -- some of the possible responses they could emit if they wished to explore various occupations in more detail. These then were the primary techniques used to motivate post-treatment V.E.B., first of all, with the subjects who saw the experimental films and, lastly, with all subjects since they all received copies of the same suggestion sheet.

Variables of Realism and Social Modeling. Finally, two other variables were considered in the development of the experimental films but these were worked into the film content so that they were standardized across the three films. It was anticipated that successful inclusion of these variables would contribute to making these films more effective than the control media in stimulating V.E.B. First is the variable of authenticity. In the development of the experimental films a concerted attempt was made to provide the audience with occupational information that was as accurate and as realistic as possible. In fact, actual employees in the occupational field studied were used in the acting roles while both the counselor and the student involved throughout the film held these respective roles in real life.

There has been much recent concern with the lack of knowledge students have of the world of work. For example, Samler (1964) stipulates that one of the key problems confronting counselors has to do with

> ...making the world of work real. For many youths the situation is such that they are not confronted with the reality of work.... The counselor also may lack appreciation and feeling for the actual work situation... (p. 412). The feeling of a human being at

> work, beset by problems, reacting to work demands, interacting with other people, and the relationship of his work to his life as a whole...(p. 425).

The experimental films, especially those involving overt and covert problem-solving by the audience, attempt to have young people observe and engage in the solving of problems which are simplified versions of those actually encountered by employees on-the-job in one occupational field. Employees are seen being confronted with problems which they must solve, and in the audience-participation versions, the viewers are asked to determine how they would resolve these problems if they were the employees. This feature of the films is aimed at providing just what Samler calls for: "The feeling of a human being at work, beset by problems, reacting to work demands, interacting with other people..." (1964, p. 425). This approach was also used to counteract the opinion that much of the currently accepted information used in vocational counseling is neither accurate nor authentic, and that the media which, typically, are career films and printed materials describing various occupations inevitably do not stimulate student interest. It must be pointed out once again that there are no research data available which would dislodge any part of this generalized opinion.

A second variable given consideration in the development of the experimental films but not manipulated for research purposes (i.e., it was standardized across the three experimental films) was that of social modeling. Bandura and Walters (1963) present an impressive body of research evidence attesting to the efficacy of social models in the learning of social behaviors by persons observing these models. Recent research (Bandura, 1965a) has extended this body of evidence to indicate that subjects acquired similar responses no matter if reward, punishment, or no consequence was contingent upon the model's responses, but that subject's performance of the imitatively learned responses was definitely affected by reinforcing consequences administered to the model. Using this and other evidence, Bandura (1965b) builds a strong argument for the prevalence of what he calls "vicarious" or "no-trial" learning defined as a type of learning

> ...in which new responses are acquired or the characteristics of existing response repertoires are modified as a function of observing the behavior of others and its reinforcing consequences, without the modeled responses being overtly performed by the viewer during the exposure period (p. 3).

In effect the experimental films presented the necessary conditions for a vicarious learning event. The model was provided by a high school student who enacted the central role in the films. He is placed in a prestigious position because positive reference is made to what he has done in the past and, in addition, the audience is told that he will serve as the "guide" through a sequence of problems encountered by employees on-the-job in the occupational field he investigated. It was expected that the young people viewing this model would both identify with him and seek to emulate some of the V.E.B. he modeled, including: in the film, he is visiting his counselor for vocational purposes and is reading occupational information; in the past, he has taken some vocational interest and aptitude tests and participated in a test-results discussion with his counselor; and in the past, he has made a number of on-the-job visitations in order to interview people at work, to see what they do in the reality setting, and to attempt to understand and suggest resolutions to some of the problems they experienced in their work. The counselor's concluding comments in the films include a summary of these examples of V.E.B. as well as suggestions of a few others.[1] As far as the modeled behavior is concerned, the audience simply observed it and otherwise performed no overt response nor was administered any reinforcing stimuli for imitating it during the period of the film presentation. Any learning of the modeled behavior from the films would have to be classified as no-trial learning. Jordaan (1963) hints at this function of social models in the performance of exploratory responses.

> Restlessness, boredom, the desire for diversion and stimulation can also lead to exploratory behavior; so too can the desire to emulate a role model (p. 52).

The objective of the attention given to these two variables (i.e., authenticity involving the viewing of on-the-job problems encountered by employees and social modeling in a no-trial learning setting) in the development of the experimental films was to supplement the uncertainty through novelty and problem-presentation characteristics of the film-mediated stimuli so that optimal effectiveness could be achieved in order to stimulate the viewers to emit V.E.B. as a result of the film. In the following section, communication research findings connected with the key variables manipulated in the experimental films will be reviewed. This will encompass a discussion of the specific methodological rationale which supplements the theoretical rationale presented to this point.

---

[1] Note: All of the suggested examples of V.E.B. were printed on the sheet which was given to each subject in the experiment; therefore, they all received the same suggestions.

RESEARCH ON EFFECTIVE CHARACTERISTICS OF COMMUNICATION MEDIA

Literature related to the theoretical rationale of this investigation already has been reviewed, particularly that which was drawn from the province of counseling, social and experimental psychology. Nevertheless, pertinent findings from one major area of study -- communication research -- have not yet been considered and since these data made valuable contributions during the actual film planning and production stages of the project, their considereration has been reserved for this section of the review of the literature.

It was decided that films would be the most efficient way of implementing the various concepts presented in previous sections, but the specific film techniques of stimulus presentation were not made apparent from a review of the psychological literature. Communication research provided the requisite evidence which permitted reformulation of a number of the writer's initial conceptions regarding film methodology.

Reference to a study conducted through the U.S. Office of Education and concerning the more effective school use of occupational information is made by Wrenn (1962) who says the study's report

> ...points out that career materials are an integral part of total curriculum resources and that audio-visual aids, especially educational T.V. and radio, ought to be used more dramatically. These are ideal for the purpose of helping young people actually see the nature of occupations which they are considering (p. 158).

These conclusions coincide with the purposes of the experimental films developed for this investigation for the writer is convinced that educational T.V. would be an ideal avenue for film presentation if this investigation could recommend an effective film for future school use. However, the Office of Education report, like so many other critical surveys, appears to omit specific suggestions as to how the audio-visual aids should "be used more dramatically" as well as what techniques could be used to help "young people actually see the nature of occupations which they are considering." Apparently the specifics must be extrapolated from communication research.

An enormous two-volume compendium of research abstracts prepared by MacLennan and Reid (1964) attests to the validity of the statement that there has been a sizeable potpourri of research projects studying educational or instructional television and films over the past decade. This body of research is almost completely aimed at studying the instructional functions of audio-visual instruments used as teaching aids with concentration given to their learning and not their motivational or action-producing effects.

The former stresses retention of knowledge criteria while the latter -- of primary interest for this investigation[1] -- emphasizes opinions, attitudes, interests and observable responses. Relatively few communication research studies have investigated motivational effects of A-V instruments by using such criteria.

Mendelsohn (1963) seems to recognize this problem when he indicates that

> ...literature on affecting actions via the mass media is scarce in the academic realm and abundant in the realm of advertising... academic research on the impact of television and other media of mass communication has been concerned primarily with learning effects, while advertising researchers have been concerned mainly with action (i.e., purchasing effects (p. 220)).

Just in case a reviewer feels he should survey advertising, rather than communication research, Mendelsohn goes on to point out that even where "action effects" have been investigated nonaction criteria transplanted from instructional research have been used, including: "recall of content, pleasant associations with messages, credibility, interest in content, and a host of other such criteria all equally nonbehaviorally oriented" (p. 121). With this perspective of the current status of the field, the writer began the review of communication research with the anticipation that key techniques and procedures rather than specific research conclusions would be extrapolated from this domain and implemented in the experimental films.

---

[1] The basic purpose of the experimental films is to stimulate viewers to emit V.E.B. following the film session. It could be said that learning functions were involved in the films since attempts were made to give viewers a realistic impression of the world of work in one occupational field as well as provide them with some conception of exploratory behaviors which could help them make wiser vocational decisions (i.e., the social modeling variable was instrumental here). However, the learning functions were secondary to the motivational effects desired.

Lumsdaine and May (1965) found it heuristic to review research on audience, response, and stimulus variables in three separate categories. Using this approach, the writer first realized that studies of audience variables had little relevance for this present investigation since there are no similar communication research projects which concentrated on the age, grade, sex and school-community factors which were studied here. On the other hand, research subsumed by the other two categories was quite pertinent, especially that dealing with stimulus variables. Lumsdaine (1964) comments that

> ...audio-visual media, as they customarily have been employed...are almost exclusively used as vehicles for presenting stimulus materials, with little explicit attention to the response aspect of the stimulus-response paradigm of learning. However, this limitation is not a necessary one and, at least at the research level, combinations of audio-visual media with various forms of response-registering devices have recently been given increasing attention from both group and individual instruction (p. 377).

This attention on the interaction of stimulus and response variables in recent A-V research on instruction was particularly meaningful since the writer was most concerned with audience responses following film presentation. It was these responses which were to be used as criteria for comparative evaluation of film effects, just as student responses can be used to make decisions on the quality of instructional media (cf., Gropper and Lumsdaine, 1961b, p. 3). The questionable availability of antecedent stimuli capable of eliciting these desired responses -- i.e., V.E.B. -- represented the basic problem that had to be resolved once the nature of the responses had been defined. Discussed in the following sections are the stimulus and response variables of communication research which were evaluated as most relevant to the methodological rationale of this investigation.

Type of Audience Participation

In film research, various types and amounts of audience participation have been studied. Semantic confusion has resulted from differences in the terminology adopted. The two major response categories are usually referred to as "implicit" and "explicit" responding but too infrequently these terms are replaced with the words "passive" and "active" respectively. Lumsdaine (1961) provided a lucid distinction by defining explicit responses as those given "by the student on some specific occasion identified to him through instructions" (p. 486), and implicit responses as those "for which the occasion is less clearly identified, such as subvocal or other responses that occur in silent reading, in listening to a presentation, or in creative thinking" (p. 487).

The explicit responses which are deliberately made as answers to a question or to an express invitation to respond can further be classified into "overt" (i.e., the response form is directly observable and, therefore, potentially controllable) and "covert" (i.e., the response form is not expressly observable since the individual simply "thinks about" his answer) response categories. Within the context of this investigation, two of the experimental films elicit explicit responses -- one requests overt participation from the audience while the other seeks to produce covert participation. The third experimental film is presented in the regular fashion involving no instructions for active participation, therefore it is assumed that this instrument elicits passive or implicit covert responding.

Active vs. Passive Participation. A host of studies have been conducted by manipulating stimulus conditions through diverse instructional instruments so that the occurrence of specific patterns of response can be elicited and regulated. Lumsdaine (1961) concludes that "procedures fostering active, explicitly occasioned response (overt or covert) are generally, though not invariably, favored by experimental evidence over procedures which do not" (p. 5). The classic study here was conducted by Hovland, Lumsdaine and Sheffield (1949) in military training programs during World War II. Their criterion of information recall following film viewing indicated that audience participation films (i.e., explicit responding), where the subjects called out their responses during review sequences in the film, produced significantly better results than standard films viewed by passive audiences (i.e., implicit responding).

These results have since been substantiated by Michael and Maccoby (1953, 1961), using short civil defense films, by Lumsdaine and Gladstone (1958), teaching the phonetic alphabet through military films, by Gropper and Lumsdaine (1961b) using ITV films, as well as by Lumsdaine, May and Hadsell (1958) who prepared four versions of a film on the heart and circulation of the blood. This latter study involved comparison of the relative effects of "participating" and "motivating" questions variously inserted into the versions while the factual presentation, pictorial materials and accompanying commentary were standardized or identical over the four versions. However, as in the other studies mentioned, the investigators were interested only in audience participation effects which were produced during, not after, the film presentation. Once again, knowledge of subject matter covered in the film was the main criteria of effectiveness for each film version. The "motivating" questions were used to stimulate student interest during the film presentation in order to induce better learning of film content. There was no concern with changes in audience behavior other than knowledge recall emitted subsequent to film watching.

In spite of the fact that there have been some film studies reporting inconclusive findings on audience participation effects (e.g., Gropper and Lumsdaine, 1961a; Kantor, 1960; and Kaplan, 1962), the weight of the evidence supports attempts which try to increase the amount of active audience participation in film presentations. Michael and Maccoby (1961) conclude their impressive experiment by stating that

> ...audience participation procedures utilizing either overt or covert practice, when the participants had knowledge of the correct responses (K.C.R.) were found to result in considerable improvement in the learning of verbal material over that resulting from simply viewing the film.... Even without the provision of the correct responses, participation appears to result in better performance than no participation (p. 289).

Just why participation procedures influence better performance never has been determined. It has been suggested (viz., Hovland, Lumsdaine and Sheffield, 1949) that this technique may increase audience members' motivation to cooperate in the learning process embodied in the film or other A-V instrument. Kanner and Sulzer (1961) together with McGuire (1961) speculate that it probably helps overcome audience boredom, disinterest or hostility, especially in settings where attitude change objectives are involved. As a contrast, Michael and Maccoby (1961) believe that no changes occur in the motivation to learn when participation is employed; for them increased performance is accounted for by the practice effects which assist participants in the learning process. Although these "explanations" seem quite plausible, further research is necessary before definitive statements can be made. At this time, it is quite apparent that motivation rather than practice effects would explain the major part of the role of participation in the experimental films developed for this investigation since response acquisition is not a major objective of these films.

Possible deleterious aspects of participation also have been noted. Both McGuire (1961) and Maccoby, Michael and Levine

(1961) refer to the practical difficulties occurring when an attempt is made to provide opportunities for participation. For example, special lighting arrangements often have to be made, while participation materials may also be required. In addition, McGuire (1961) demonstrated that in instructional settings where speeded materials must be learned any form of explicit participation may have detrimental effects on the learning process at the higher rates of stimulus presentation. Furthermore, evidence presented by Kimble and Wulff (1961) challenges an assumption apparently accepted without proof by many researchers on audience participation effects (e.g., Mendelsohn, 1963, p. 222). This assumption states that the greater the amount of active audience involvement in programed presentation, the more effective will be the communication. Kimble and Wulff believe their study indicates that "an intermediate proportion of participation exercises is superior in teaching effectiveness to a very large or very small proportion of participation exercises" (p. 236). This finding suggests that there may be variable optimal amounts of participation in different instructional settings dependent upon the nature of the material to be learned and the media employed. This possibility poses new problems, particularly one involving measurement of degree of participation.

From the literature reviewed in this section, the writer concluded that active, explicit participation should be attempted in two of the experimental films and contrasted with the passive, implicit participation elicited in the third. That there would be additional costs in preparation and use of the participation films was fully recognized but this prospect was counterbalanced by the anticipated increment in utility such films could have over standard films regularly used for educational and vocational counseling. There is clear research support for the use of active-participation procedures for promoting learning effects but the same cannot be said for motivation effects, especially when behavior change beyond the time of film presentation is desired. However, it was hypothesized that vocational films tailored to the interests and needs of specific audiences could use participation techniques to an advantage if the stimulation of changes in audience members' subsequent behavior, not knowledge of film content, was the desired response. In the two active-participation films, audience involvement would be achieved by asking viewers to answer questions which, in effect, would indicate how they would solve the problems encountered by the employees from the occupational field depicted in the films. The belief that these occupational problems would stimulate viewers' interest in this and other vocations and thus motivate them to emit V.E.B. following the films was expressed in an earlier discussion of the theoretical rationale. Active participation in solution of occupational problems provides the method for supplementing the audience interest which is elicited by passive viewing of the problems as well as providing the audience with a more realistic understanding of the world of work -- its tasks and its people -- at least for one occupational field. Even the stimulus novelty and uncertainty (e.g., Berlyne, 1960; Jordan, 1963) of participation films should be efficacious in stimulating students to emit V.E.B. after film viewing. By averaging the effects produced by the two active-participation films and comparing these with those of the standard experimental film, it should be possible to arrive at some conclusions regarding the efficacy of the active-participation variable in three vocational films of identical factual content.

Overt vs. Covert Participation. May and Lumsdaine (1965) believe that "the most popular current experiment is the comparison of 'overt' (generally written) response versus some form of 'covert' responding -- either implicit (generally reading) or explicit (e.g., thinking the answer to a specific question)" (p. 499). After reviewing some of these studies, it was quite apparent to the writer that no concensus exists as to which of the two active-response modes is consistently more effective in improving learners' performance. Traditionally, it has been assumed that overt, observable responses must be emitted if instructional processes are to be effective. This is a particularly significant assumption of adherents to the operant conditioning paradigm of learning but just as "with the other original assumptions, that of the necessity of overt response is being challenged by research" (Carpenter and Greenhill, 1963, p. 2).

Examples of this challenge are provided by a number of studies which have used A-V media while implementing active-response techniques calling for either overt responses or explicitly-occasioned covert responses. Gropper and Lumsdaine (1961b) discuss evidence which indicated that on tests of acquisition and retention no significant differences were found between subjects who read and attentively listened to programed materials presented over instructional television and subjects who overtly responded (e.g., some were asked to answer questions or complete statements stated in the programed materials) to the same materials. However, this does not represent a controlled comparison of the overt and covert response modes since the former subjects apparently were not requested to respond, covertly, to the same questions which were presented to the other subjects.

Michael and Maccoby (1961) made a more rigorous comparison by having their subjects actively participate in a film which contained questions covering points discussed in preceding sections of the film. Some of these subjects wrote their answers -- i.e., overt practice -- while others were asked to think about their answers. No evidence was found of a difference between the two groups of subjects on a retention quiz administered after the film. Similarly, studies by Maccoby, Michael and Levine (1961) and Kanner and Sulzer (1961) attempted to determine the relative effectiveness of overt-and covert-participation film procedures but were unable to find significant differences when measures of learning effects were employed.

In the light of this evidence, any attempt at selecting one response mode in preference to the other would have to be made in terms of factors other than experimental findings. Film production and presentation costs would be one such factor and would invariably lead to the selection of covert response modes as the technique of greatest utility. When overt-participation procedures are used, more expensive response materials and special conditions for film administration in addition to assistance in the proper utilization of these materials would be required (cf., Michael and Maccoby, 1961, p. 295).

In evaluating the evidence falling within this section of the review, the writer is convinced that the conclusions adopted in the previous section -- i.e., the situational specificity of the degree of effectiveness of active-or passive-participation response modes -- obtain for the present discussion. Overlooking experimental inadequacies, the key variables that seem to influence response mode effectiveness involve situational conditions. Further research will perhaps reveal that overt responding is specifically more effective for certain purposes with certain subjects, while covert responding might be demonstrably more efficacious in other situations. More rigorous attempts should be made at identification of the situational conditions in which one form of response is more applicable than the other. Such an attempt was made by McGuire (1961) who successfully demonstrated with 35 mm slides that as speed of instruction is increased there is less advantage of overt participation over covert participation. Furthermore, Lumsdaine (1961) suggests that whether or not an effective contribution for overt responding is found may depend on the relevance of the responses to the situation and how adequately these responses are cued or prompted by the A-V instrument.

The evidence which demonstrates the situational-specificity of response-mode effectiveness stems from other investigations besides those which have used A-V media. A substantial body of experimental findings are available in the area of programed instruction where media other than films have been adopted. For example, Krumboltz and Weisman (1962) used programed textbooks and found overt responding superior to covert responding under conditions of delayed, but not immediate, testing. However, since films were the basic instruments to be used in this investigation, only those studies which involved filmed presentations have been emphasized in this review.

Using this approach stressing the situational-specificity of response modes, it is argued that the evidence discussed here which disclaims the assumption that more effective instruction results from overt responding might not hold for non-instructional situations -- e.g., films used as motivational instruments in educational and vocational counseling settings. This investigation studied the possibility of this conclusion being true. Within the counseling setting, it was hypothesized that overt responding would have additional beneficial effects over covert procedures since it involved greater stimulus novelty and uncertainty plus an objective check of audience participation in the problem-solving process adopted. With overt responding there is a tangible record of audience participation; the fact that their responses are observable should stimulate these audience members to participate more attentively than those in the covert-participation condition. In such a context, overt responding becomes just another technique for assuring a greater degree of audience participation and, hopefully, additional motivation for later performance of vocational exploratory responses.

The procedures used in the experimental films to elicit both overt and covert audience responding essentially are not unlike those used by Michael and Maccoby (1961). In the film version involving overt responding, subjects answer questions written in special workbooks during response periods when the projector is shut off and the room lights turned on. In the covert-participation procedure the same questions are printed on the screen, the projector is not stopped, and the subjects are asked to "think" about their answers. Each group of subjects receives identical response time, therefore controlling a variable that has been neglected often in similar communication research projects (cf., Lumsdaine, 1961, Chapter 31).

Relevant Stimulus Variables

Besides the attention given to the response variables of audience participation, the review of communication research also concentrated on studies investigating programming concepts, problem-solving and the feedback of information on the correctness of responses.

Programed Problems. The term "programed" has been used here in the generic sense defined by Lumsdaine (1964) as a "sequence of learner behavior, not merely a reproducible set of stimulus materials" (p. 385). In the three experimental films, the occupational problems presented for audience viewing (i.e., in the passive-participation version) and for audience solution (i.e., in the two active-participation versions) were pre-planned in a specific sequence which, because of the mechanical arrangements used to present this sequence, should elicit a predictable pattern of responses -- especially in the active-overt participation film version. The concept of "external pacing" used by Carpenter and Greenhill (1963) characterizes the procedure used in the two active-participation films. All students respond to the programed problems as a group with sufficient time having been allowed for each problem in the sequence so that the subjects can read the questions, respond to them and prepare to check or evaluate their responses as the film continues. The time for the response periods has been determined empirically and is identical across all problems in both film versions.

Carpenter and Greenhill (1963) together with Mitchell (1963) are representative of the attempts currently being made to adapt programed-learning concepts and techniques to televised instruction. They are convinced that

> ...the presentation of programed materials over television offers a possible means of obtaining frequent, active, overt responses from all learners, and of giving them immediate knowledge of results...something which is rarely achieved in large-group instruction and the absence of which is frequently cited as a "disadvantage" of television (1963, p. 7).

There appears to be no evidence that would preclude the presentation of programed materials over television for motivational rather than learning purposes and within a counseling rather than an instructional setting.

The problems which are programed in the three experimental film versions are quite different from those involved in most instructional films. As previously mentioned these problems were selected both so that they would stimulate exploratory response patterns which could be emitted following the film presentation, and so that they would personally involve the viewers in authentic decisions the employees faced on-the-job. Instructional films usually do not use live dialogue to present problems experienced in reality situations of this nature nor do these films elicit viewers' reactions regarding how they would solve the problems if they were faced with them in real life. The usual participation questions in instructional films attempt to have students regurgitate facts that have just been presented in previous sections of the film.

Stopping the two participation versions of the experimental film at critical places where employees must make decisions and asking the viewers to state what decision they would choose if they were the employees is similar to Hadsell and May's (1958) "decision-points technique." These experimenters stopped their experimental films after each of a series of poignant case histories, they turned the lights on and asked their subjects to respond to questionnaire items. This technique is similar to the one used in the active-overt participation film version in this investigation but it served a different purpose. Here it was implemented in order to give viewers experience in job-related problems and not specifically to change their attitudes toward these problems. Hadsell and May's objective, which they did not successfully attain, was to change viewers' attitudes toward the concept of due process of law which was involved in the decision points. In the present study, it was anticipated that the problem-solving experiences would affect interest, attitude and observable behavior change relevant both to the occupational field presented and to the idea of vocational exploration and not relevant to the specific questions to which the viewers responded.

Knowledge of Correct Responses. A critical stimulus variable studied in communication research of A-V instruments involving student participation has been labelled variously as feedback, immediate reinforcement, and knowledge of correct responses (K.C.R.). As indicated in Lumsdaine's (1963) review of research, "relatively few studies have experimentally manipulated reinforcement factors as they operate in practical instruction" (p. 619). However, those studies which have made reasonable approximations to the practical setting (e.g., Maccoby, Michael and Levine, 1961; Michael and Maccoby, 1953, 1961) have found consistently that K.C.R., as compared to no K.C.R. conditions, have a more effective influence on student performance.

Maccoby, Michael and Levine (1961) studied the participation of military personnel in training films and demonstrated that covert-participation procedures without K.C.R. did not produce effects which were significantly different from those accompanying the showing of a standard film embodying identical content. On the other hand, covert participation with K.C.R. successfully effected significantly larger results than those produced by the two other conditions. Michael and Maccoby (1953, 1961) used classes of high school students in a more complex factorial design involving all possible combinations of overt and covert participation, K.C.R. and no K.C.R. Participation involved answering questions about the content in previous sections of the film. Because of the significant differences between the scores obtained by the classes in the K.C.R. and the no K.C.R. treatments, Michael and Maccoby conclude that

> The most important contribution to effective participation under the conditions of participation studied, is K.C.R. When so such knowledge is available, the improvement in learning is considerably reduced (1964, p. 284).

Once again, a technique found effective in instructional films was employed in the vocational counseling films developed for this study. However, no attempt has been made to manipulate the K.C.R. variable and thus all three versions of the experimental film provide the same facts. This feedback information is divulged by showing how the employees depicted in the film actually solved the problems they faced. For viewers of the two participation versions, this knowledge is provided immediately after they have actively responded to the questions. As for viewers of the standard film version, since they are not involved in problem-solving, they merely see the film as it is run through each of the sequenced problems without pause (i.e., problem presentation leads right into problem solution).

Within the context of programed learning -- especially where teaching machines are used -- feedback has two functions: one, to to provide the learner with information about the degree of correctness of his response; and the other, to provide him with reinforcement or reward in order to strengthen responses which preceded the feedback. Perhaps the feedback concept is inappropriately applied within this investigation since the concern in the audience-participation versions primarily involves the second function of feedback, its motivational, not its informational, effects. Unlike the individualized feedback of information received by the learner in the typical programed teaching setting, the films provide the same feedback to all viewers regardless of what responses they made. Because there has been extensive prior prompting in the presentation of the sequenced problems, it is expected that over three-quarters of the participants would answer each question correctly, thus providing additional incentive for the future emission of V.E.B. The assumption here is similar to that adopted in A-V instruments used for instructional purposes, namely, that "practice alone is not enough. If a participation procedure leads to practice of errors, it would detract from, rather than add to, the value of a training film" (Kimble and Wulff, 1961b, p. 226). The writer recognizes that the feedback technique implemented in the experimental films is not identical with traditional uses of the feedback concept. Yet, there is no research which precludes the possibility that it may be a very effective technique.

Incentive Factors. All of the techniques and concepts which have been extrapolated from communication research studies and then incorporated into the experimental films have now been reviewed.

The methodological rationale which underlies the attempts made in this investigation to stimulate viewers to emit V.E.B. following film presentation also has been discussed. Yet, some reference still needs to be made to the handful of experiments which are similar to the one described here since they have examined the effects of films in motivating the audience to make interest, attitude and observable behavioral changes following, not just during, the film showing.

Realizing that verbalized attraction to an object does not necessarily mean a concomitant change of observable behavior toward that object, a few studies have used behavioral criteria to measure audience interest changes subsequent to film presentations. Lumsdaine (1958) attempted to influence subjects' reading interests by showing them a film based on a complete novel. Criteria of interest change not only included subjects' opinions of the degree to which their interests had been affected but also periodic reports of how much they had read in the books assigned, and a counting of the number and type of books which the subjects voluntarily withdrew from the library. With a sample of 110 tenth grade girls, Lumsdaine found that those subjects who saw the film did not react any differently on the behavioral criteria than those who saw unrelated films but who received the same book as an assignment in class. However, the results did indicate discrepancies between subjects' verbal statements of interest and their subsequent behavior.

May and Jenkinson (1958), using films for the same purpose, compared a film which presented part of a novel with a film which gave the complete story. They also used nonverbal indices of interest including librarians' records of who withdrew the book, subjects' reports of whether they had started to read it and how much they had read, and objective test information on the amount of book content the subjects could recall. The results demonstrated that the first version influenced significantly more subjects to withdraw the book from the library but the evidence was less clear that these students actually read the book and remembered its content. A third study, Hadsell and May (1958), unsuccessfully used audience-participation procedures in film to influence opinions regarding the concept of due process of law. This experiment did not include criteria of subsequent behavioral changes -- one of the criterion measures adopted was an opinion questionnaire administered immediately before and after the film; the other measure was changes in subject's responses to the decision points in the films.

Gropper and Lumsdaine (1961b) report some success in stimulating students' extracurricular science activities -- viz., the number of home experiments they performed after seeing the basic experiments demonstrated on T.V. at school. After watching these science experiments, some of the students were given postcards which they could mail if they wished to receive equipment necessary for home experiments. Other students saw the same demonstrations but received no postcards. The results indicated that the postcard group reported performing significantly more home experiments in the two weeks following the T.V. program than did the other group. It is clear that the key variable effecting greater extracurricular science experiments in this study was the provision of the postcard and the experimental equipment. This constitutes excellent evidence that a one-shot experience involving the showing of a film and nothing else cannot be expected to have too much effect. The audience must understand what to do next if their interest has been stimulated and the resources must be available if they seek assistance later in following out these interests.

May and Lumsdaine (1958) stated the following conclusions:

> Despite the fact that some theatrical motion pictures do evoke strong emotional responses from audiences, and despite the fact that television commercials do motivate people to buy things, from the experimental evidence available we cannot conclude that instructional films shown in assembly halls or in classrooms, without supplementary persuasion by the teacher, will motivate pupils to read more books or better books, or to engage in research or any further learning activities. The main educational effects of suitable films that appear solidly documented are thus the teaching of factual information, relationships and various skills (p. 316).

No attempt at such "persuasion" was made in the investigation described here but subjects who viewed the experimental films were given specific suggestions about what they could do next if their interest had been stimulated -- i.e., if they wished to emit V.E.B. following the film. All counselors and teachers concerned had materials available so that if subjects requested assistance they were assured of receiving it. The adults were asked not to initiate conversations about the films or about V.E.B. subsequent to the films. As was noted previously, if any version of the experimental film is distributed for school use following this investigation, it will be accompanied by subsidiary materials which will help the counselor or teacher capitalize on any stimulation that the film presentation may elicit from student audiences. It is recognized that the interaction effect between future users and the instrument itself will be an important variable in the instrument's effectiveness. The experimental phase of this investigation was initiated with the belief that if personnel who used these experimental films provided the necessary -- though limited -- support, the first really significant evidence would be obtained indicating that at least one type of film developed for specific purposes was an effective media for influencing the subsequent behavior of its audience members.

SUMMARY

In this chapter the writer has tried to indicate that the underlying purpose of this investigation was to continue the slight, but potentially significant, trend toward more experimentally-oriented research on vocational behavior. More specifically, this investigation focused on the initiation, development and evaluation of three experimental film versions in an attempt to discover which one, if any, could be recommended as a supplementary aid for educational and vocational counseling. The main purpose of these films would be to stimulate viewers to emit vocational exploratory behavior subsequent to watching one of the versions.

The theoretical portion of the rationale for this study has been drawn from decision theory -- thus accepting a decision-making model for educational and vocational counseling -- as well as from psychological concepts of exploration and curiosity. Additional aspects of this part of the rationale stemmed from social modeling theory and research as well as current counseling demands for more realistic contacts of students with the world of work.

In order to find the techniques by which these theoretical concepts could be implemented into a filmed presentation, a review was made of the communication research on learning and motivational effects produced by A-V instruments used in academic settings. A more operational rationale was formulated as the methodology of film production was specified. Procedures such as active participation through overt response modes involving audience decisions in a sequence of occupational problems followed by immediate knowledge of the correct response had no little foundation in instructional A-V research and thus were extrapolated from that setting to the counseling approach and employed in the production of one of the three experimental films. The other two versions were simple variations of this basic film. The type of experimental comparison that these three versions permitted has been hinted at rather indirectly but will be described in more detail in the next chapter.

CHAPTER II

EXPERIMENTAL DESIGN AND PROCEDURES

Essentially the development of the experimental films was based on the rationale discussed in the last chapter and not on reliable empirical data. As already indicated there is little research support available because most of the related communication studies in academic settings have been dedicated to measuring the learning, not the motivational, effects of films, while inconclusive results were produced by studies which did attempt to measure film influence on viewer post-film attitudes, interests and behavior. This investigation attempted to compensate for the lack of earlier supportive evidence by putting all three films "to the test." The experimental design chosen was one which would permit causal inferences about the comparative effects produced not only by the experimental films but also by a group of other media which were included for controlled contrast purposes. Therefore, the basic questions for the experimental phase of this investigation were: Did the films achieve the purpose for which they were developed? Did they influence viewers' attitudes, interests and behavior?

SPECIFIC OBJECTIVES

The experiment was designed so that equal numbers of male and female grade ten students from two high schools located in communities of different socio-economic levels were assigned to each of seven treatment conditions. Each student experienced one treatment only. In addition to the three experimental film treatments, there were the four controls including two film and two written booklet presentations. Criteria for treatment effectiveness included interest and attitude changes as well as frequency of vocational exploratory responses occurring during the month following administration of the treatments.

The specific objectives of the experiment were the following:

1. To test the averaged effectiveness of the three experimental films against the averaged effectiveness of the four sets of control materials.

2. To test the averaged effectiveness of the active-overt and active-covert participation/problem-solving versions of the experimental films against the effectiveness of the passive participation/no-problem-solving version.

3. To test the relative effectiveness of the active-overt and active-covert participation/problem-solving versions of the experimental films. Tests of all three objectives were to be made for both sexes and both schools.

If these three objectives were attained, conclusions could be made about the following questions:

1. How well do the experimental films compare with a selection of other materials -- all except one of which are relevant to vocational counseling?

2. How important is the audience-participation variable in the experimental films?

3. How important is overt, as opposed to covert, participation in these films?

All conclusions also could be made with reference to possible sex and school differences.

STATEMENT OF HYPOTHESES

The seven treatment conditions were labeled and coded as follows:

E_1	Active-overt participation film	C_1	Regular banking career films
E_2	Active-covert participation film	C_2	Printed banking career information
E_3	Passive participation film	C_3	Printed general career information
		C_4	Filler film/pseudo-treatment

Treatment conditions in the left-hand column are the three experimental films whereas those in the right-hand column are the four control treatments.

The following research hypotheses were made:

A. Tenth grade students assigned to treatment conditions E_1, E_2 and E_3 will emit more vocational exploratory responses, will make greater increases in inventoried and expressed interests related to banking occupations, and will make more favorable attitude changes toward the banking industry than will equivalent students assigned to conditions C_1, C_2, C_3 and C_4.

B. Tenth grade students assigned to treatment conditions E_1 and E_2 will score higher on these same criteria than will equivalent students assigned to condition E_3.

C. Tenth grade students assigned to treatment condition E_1 will score higher on these same criteria than will equivalent students assigned to condition E_2.

D. Tenth grade students in all treatment conditions in the high school from a suburban community will score higher on these same criteria than will students in all treatment conditions in the high school from a less economically-privileged neighborhood.

E. Tenth grade female students in all treatment conditions in both schools will score higher on these same criteria than will equivalent male students.

Recent findings by Krumboltz and Thoresen (1964) as well as by Krumboltz and Schroeder (1965) indicated that their female subjects tended to emit more information-seeking activities than did male subjects. This provides some support for the directional prediction in hypothesis E, however hypothesis D was based on intuitive inference only. It was postulated that the treatment materials would not be sufficiently powerful to influence interest, attitude and behavioral change in students from the less economically-privileged community since these students would tend to believe that vocational opportunities discussed in the treatment sessions traditionally have not been available to students similar to them.

Possible first and second order interaction effects involving treatment condition, sex and school were also tested although insufficient information is available on the possible nature of these interactions. Because of this, the following null hypotheses were made.

F. There will be no interaction between treatment conditions and schools which the subjects attend.

G. There will be no interaction between treatment conditions and sex of the subjects.

H. There will be no interaction between sex of the subjects and schools which they attend.

I. There will be no interaction between treatment conditions, sex of the subjects and schools which they attend.

In a similar manner, research hypotheses A through F were rephrased in the null form in order to permit statistical analysis.

EXPERIMENTAL DESIGN

The design utilized here involved a combination of the "pretest-posttest control group" and "posttest-only control group" designs referred to by Campbell and Stanley (1963, pp. 183-196) as two of the three "true" experimental designs. One major adaption, however, involved replacing their no-treatment control group with one receiving a pseudo-treatment. The dependent variables were scores on three criterion measures administered before and after the treatment procedures in addition to scores on a fourth measure administered only once -- one month following the treatments. The three independent variables and the number of levels of each include: treatment condition, varied on seven levels; sex, varied on two levels; and school, varied on two levels.

Randomization procedures were used to select subjects, to assign them to groups within each school, and to assign treatments to the groups. These procedures resulted in a 7x2x2 complete factorial experiment with equal replications (cf., Edwards, 1965, p. 175). However, due to the fact that an inadequate number of subjects had been randomly assigned to a reserve group in each school, equal replications within each cell were not obtained. An unexpected amount of absenteeism on the day of the treatment presentation accompanied by the problem some students had in getting to the treatment rooms on time[1] were the reasons for the unequal cell sizes.

Table 1 shows the design of the experiment with the final cell sizes placed in parentheses beside the original frequencies.

---

[1] Once the films had been started no more subjects were allowed to enter the rooms.

TABLE 1

PROPOSED AND ACTUAL NUMBER OF SUBJECTS IN EACH CELL OF THE EXPERIMENTAL DESIGN

Independent Variables		Treatment Conditions							
		E_1	E_2	E_3	C_1	C_2	C_3	C_4	Total
School A_1	Females	10	10	10	10	10	10(9)	10	70(69)
	Males	10	10	10	10	10	10	10	70
School A_2	Females	10	10	10	10(9)	10	10	10	70(69)
	Males	10(6)	10	10	10	10	10(6)	10	70(62)
Total		40(36)	40	40	40(39)	40	40(35)	40	280(270)

NOTE: School A_1 is the high school from a suburban community.

School A_2 is the high school from a less economically-privileged neighborhood.

Numbers in parentheses signify cell size actually used.

Subjects

The experiment was replicated in two high schools from two different school districts near Stanford University. The first school, Lynbrook High in the Fremont Union High School District of Sunnyvale, California, draws its students from the Cupertino, West San Jose and Saratoga communities, which are composed primarily of suburban middle and upper-middle class families. A low percentage of this school's student body is non-white.

The other school, William Overfelt High in the Eastside Union High School District of San Jose, California, enrolls a large percentage of Mexican-American, Negro and Oriental students who live in less culturally-advantaged areas of East San Jose.[1]

To fill out the cells of the experimental design for each school. 140 grade ten students were required. The grade ten population was selected by process of elimination since it was decided that the time involvement demanded by the experiment could be heavy for grade nine and grade twelve students who were either just beginning or just finishing their high school studies. The decision to use grade ten rather than grade eleven students was due to the belief that the former would enable a more intensive test of all media since tenth graders had probably devoted less thought to making vocational decisions than eleventh graders. There was also a feeling among the school personnel involved that students should receive assistance in educational and vocational decision-making earlier in their high school history.

Within each of the two high schools, a major logistics problem would have arisen if the entire tenth grade population had been involved in the experiment. Neither school could make available large enough rooms for presenting a number of films at the same time.

---

[1] One of the school's administrators estimated that approximately 54 per cent of the student body is non-white. A study of the student body in the Fall of 1965 indicated 46 per cent Mexican-American and Portugese, 7 per cent Negro and 1 per cent Oriental.

Since it was necessary to control for time of day during which treatments were presented, it was decided to use smaller groups, all receiving the treatment procedures within a two-hour time span within each school. The population sampled was all tenth grade students taking typing courses. In both schools, typing is offered as an optional subject and thus heterogeneous classes result. An additional benefit of using this population was that it enabled the investigator to receive the cooperation of the Business Education, as well as the Counseling, departments. Staff members in both cases were interested in both the content and function of the materials studied.

The names of all students available from within each school were listed. It was determined that within each school 70 males and 70 females would cover the treatment conditions and still allow for a reserve group sufficiently large to allow for absentees[1]. With this calculation, all available students were used at Overfelt but not at Lynbrook. Working with one school at a time, the writer randomly assigned males than females to each of eight groups until the predetermined limits were reached. The reserve groups were set aside each time and then the seven treatment conditions were randomly assigned to the remaining groups.

Experimental Treatment Conditions

Three 16 mm black-and-white sound films, each entitled "Careers in Banking", were produced in conjunction with the

---

[1] As noted earlier, the reserve groups turned out to be short one girl at Lynbrook and short one girl plus eight boys at Overfelt.

California Bankers Association as alternative versions for experimental comparisons. The stimulus for the project came from the Association because they wished to develop an A-V instrument which would be effective in a vocational counseling setting. Film version E_1 was developed for this purpose but while it was being planned and produced the other two versions were formed. All three were adopted as "experimental" versions and have never been used in actual school settings outside those used for this investigation.

Development of the basic script for the three versions began with identification of the positions in the banking industry which were to be portrayed in the film. The following criteria were used:

1. The positions must represent a cross section of employment opportunities in banking. A variety of entry-level requirements must be represented.
2. The positions must be open to men and women.
3. The positions must not be "glamour" jobs to which students would aspire on the basis of superficial information.
4. The positions must not involve rare or unusual skills.
5. The positions must have some current social demand as well as possess good future employment prospectives.

Finally, the following banking positions were selected: teller, operations officer, computer programmer, trust officer, and lending officer.

During the next stage of script development, a specific problem was selected from among those encountered each day on-the-job by employees in each one of these five banking positions. Selection criteria for these problem tasks included:

1. The problem must be adaptable to a five or six minute filmed presentation.

2. The problems must be representative of those faced by employees in these positions.

3. The problems must be intrinsically interesting to the target population.

4. Each problem must have a definite decision-point where the employee must decide how he or she is going to resolve it.

5. The problems must have sufficient depth so that a series of questions about them could be presented to the audience.

6. The problems must [illegible] of difficulty that high school students would be able to suggest answers without having any training in the related areas.

The last stage of script development involved integrating these problems into a sequence which was accomplished by having the film start and end in a counselor's office (not identified as college or high school). In all versions, the audiences first see a male Caucasian student, who has just returned from a visit to a number of banks, talking to his counselor. The student then serves as a guide, leading the audience through the five problem situations -- each one acted in a bank by regular bank employees.

Student-counselor conversation provides the transitional device linking the sequence of problems. After the fifth problem has been presented and resolved, the counselor and student note that there are many more positions in banking than the ones sampled; others are listed (some are accompanied by brief on-the-job film shots) and then they present the sixth "problem". In the last problem the counselor asks the viewers what they should do next if their interest in banking careers has been stimulated and then he lists some possible exploratory responses, following which the film ends.

Once the script had been prepared (see Appendix J for script of film version E_1) and had been reviewed by a number of professional people, a group of college drama students recorded it on audio tape after which it was pretested with a class of high school students followed by a closer critique from two small groups of students. They reacted to all parts of the script and to questions which could be asked about the banking problems. The script was then modified accordingly, followed by film production of the versions described below. All versions include the same basic film content -- pictorial, live dialogue, and commentary by counselor and student -- except for the addition or deletion of instructions which explain the type of audience participation requested. Also, at this time the final audience-participation questions were selected. For each of the five problems experienced by the five banking employees, a series of objective questions were prepared so that six "true" or "false" responses had to be given in two minutes for each presented problem. All questions involved respondents supposing they were the employees and they had to decide how they would resolve the problems -- i.e., decisions had to be made. Only two of the following film versions involve these questions.

E_1 Active-overt participation film. Subjects in this experimental group were given copies of "Careers in Banking -- Students' Workbook" (see Appendix K) before the film. This booklet presented the five sets of questions with each set on a different page. In the film the counselor gives the audience the following instructions:

> Now, we're going to see some of these problem situations and we'd like you to try to come up with reasonable solutions. It'll work like this: You'll have a chance to see simplified versions of a series of actual banking prob-
> case, imagine that you are the employee who is faced with the problem. When we get to the point where a solution to the problem is necessary -- this will happen. (SCREEN GOES WHITE) (QUESTION MARK) (THEN WHITE). The projector will be turned off, the lights turned on. You will turn to the appropriate page of the Careers in Banking Workbook and then you will have a chance to try your hand at banking by marking the answers that seem to be correct. When you've had enough time, the lights will go off, the projector will be started. As you see how the bank employee solved the problem, you can compare your answers mentally with those given in the film. Many different answers are possible; banks differ in the way they solve their problems. The answer you'll hear will be the one chosen by the employee of the particular bank filmed. Altogether there are five sets of problems which we will present for your solution. Notice that your Careers in Banking Workbook is divided into sections, one section for each

> problem, all in the order in which the film presents them.
>
> We'll be covering a lot of ground and meeting a number of different banking people so we have asked Ken to serve as a guide. He'll give you some background information which will help you make decisions on each problem.

Each time a question mark appears on the screen, it is accompanied by a bell sound as well as these printed instructions for the projectionist: "SHUT PROJECTOR OFF. TURN LIGHTS ON FOR TWO MINUTES." Total time for this version is 45 minutes (i.e., running plus participation time). The subjects could check any of their answers for a second time if they desired by using an answer sheet distributed to them after the film. All workbooks were then collected.

E_2 Active-covert participation film. Subjects in this experimental group received no subsidiary materials. Immediately, they viewed this film version from which had been deleted all references to the Careers in Banking -- Students' Workbook. The counselor in the film provided these instructions at the same point where instructions had been given in version E_1:

> Now, we're going to see some of the problem situations and we'd like you to try to come up with reasonable solutions. It'll work like this: You'll have a chance to see simplified versions of a series of actual banking problems which bank employees must solve. In each case, imagine that you are the employee who is faced with the problem. When we get to the point where a solution to the problem is necessary -- this will happen. (SCREEN GOES WHITE) (QUESTION MARK) (THEN WHITE). A number of questions will then

> appear on the screen. Think about the answers. You will have a chance to try your hand at banking by choosing the answers that seem to be correct. When you've had enough time, the film will continue. As you see how the bank employee solved the problem, you can compare your answers mentally with those given in the film. Many different answers are possible; banks may differ in the ways they solve their problems. The answer you'll hear will be the one chosen by the employee of the particular bank filmed. Altogether there are five sets of problems which we will present for your solution.
>
> We'll be covering a lot of ground and meeting a number of different banking people so we have asked Ken to serve as a guide. He'll give you some background information which will help you make decisions on each problem.

The film had been externally paced, presenting each question for a sufficient length of time so that all students had time to read it before the next question appeared. The questions, which were the same ones presented in the workbook in treatment E_1, and the new responding procedure resulted in two minutes of response time just as there was in version E_1. Total running time for this nonstop version is 43 minutes. As in version E_1, the subjects could check any of their answers for the second time if they desired by using an answer sheet provided for them after the film.

E_3 Passive participation film. Subjects in this experimental group received no subsidiary materials; they viewed this film version immediately and were not involved in any type of problem-solving participation procedure. All references to the Careers in Banking -- Students' Workbook were deleted as were any other statements about the audience answering questions. At the same point as in films E_1 and E_2 the counselor in this version provided these instructions:

> Now, we're going to see some of these problem situations. You'll have a chance to see simplified versions of a series of actual banking problems which bank employees must solve. We'll be covering a lot of ground and meeting a number of different banking people so we have asked Ken to serve as a guide. He'll give you some background information which will help you understand each problem.

Total running time for this nonstop, no audience-participation version is 30 minutes.

Control Treatment Conditions

Attempting to compare the relative effectiveness of the experimental films with media similar to those often used in educational and vocational counseling settings, the writer selected three alternative [illegible] takes umbrage with this type of global "media-vs-media or device-vs-device" comparison because he believes that it is often impossible to identify the specific factors causing any differences which are obtained. Despite this conviction, he will admit to the utility of experimental contrasts like the one attempted here, if they are conducted for purposes -- identical to those adopted here -- which

> ...may be propagandistic, in the interest of gaining support for more incisive research and development, or may represent other heuristic aims, such as testing the worth of a general approach before proceeding; or to provide experiences or hypotheses about specific

> factors which may be a useful background for planned future experiments; or to establish that a sufficient range of effects can be achieved, to insure that a methodology can profitably be further pursued along similar lines...(p. 598).

The present investigation involved an experimental comparison only; no claims can be made that results can be generalized to all similar vocational instruments. There is no attempt being made here to claim that materials used in these three control treatments are random selections from all materials available, even though materials used in C_2 and C_3 are the only members of their respective instrument classes which deal with careers in banking. If any definitive contrast data is obtained from the statistical procedures used here, it will provide evidence either for further research or disbanding of research on, the methodological techniques represented in the experimental films. The true experimental comparisons involved in this study employed controlled variation of specific factors which were defined in terms of theoretically-based variables. This comparison involved only the three experimental films.

The fourth and final control instrument was selected for the group of subjects who were exposed to all conditions of the investigation except the vocationally-oriented treatments. By presenting these subjects with a film containing neutral content irrelevant to the vocational counseling purposes of this investigation, but not notifying the subjects of this, it was possible to help these subjects feel that they, too, were participating in a special out-of-class activity, one which they believed was similar to that experienced by other subjects. This treatment condition was an attempt to control for the so-called "Hawthorne effect".

C_1 Regular banking career films. Only two films are available on the topic of careers in the banking industry; both were obtained for this investigation and were then spliced together so that the treatment presentation would not have to be interrupted by a rethreading of the projector. These films are produced and distributed by the American Bankers Association which catalogs them as follows:

1. Future Unlimited. Suitable for showing to youth and adult audiences. Running time about 13 minutes. Black and white prints. Narrated by famous newsman, commentator and author Quentin Reynolds. A banking career film featuring real bankers. Mr. Reynolds visits five bankers (four men and a woman) from New York to California, from the big city bank to the small country bank. He talks to them about their work and observes their activities in different work situations. The interesting result is news-reporter-documentary coverage of banking career challenges, opportunities and rewards (American Bankers Association, 1958, pp. 7-8).

2. A Future to Bank On. Primarily intended for youth audiences. Running time about 10 minutes. Black and white prints. Many thousands of bank jobs become available to young people every year. In no other business have so many executives come up through the ranks directly from high school. This film on banking as a vocation shows that banks offer job opportunities, happiness and security; banks have jobs for both boys and girls; you can learn on the job and advance as you learn; American Institute of Banking

> courses help you get ahead. Jim and Pat, two high school students, visit a bank to learn all about vocational opportunities in banking (American Bankers Association, 1958, pp. 5-6).

Total running time for these two nonstop, no active audience-participation control films is 23 minutes.

C_2 Printed banking career information. Only two booklets on the topic of careers in the banking industry are available for vocational counseling purposes and, once again, these are published and distributed by the American Bankers Association (1960, 1963). Both of these are attractively arranged and each is written for a specific target audience. Brief descriptions of these two booklets are as follows:

1. Future Unlimited: Career Opportunities in Banking for High School Graduates (1960).

1. Future Unlimited: Career Opportunities in Banking for High School Graduates (1960).

   Twenty-one pages; well illustrated with black and white photos and drawings. Topics considered are: What a Banking Career Offers You; The Environment; What You Will Earn; Educational Opportunities; Wide Range of Jobs; Where You Would Start; Your Chances for Advancement; Opportunities for Girls; College Before Career?; Typical Bank Positions; How to Apply for a Position; Importance of Banks in Today's World.

2. Banking: A Career for Today and Tomorrow (1963). Twenty-four pages; all illustrations are black and white drawings or graphs; "provides information for college graduates on career opportunities in the banking business -- a rewarding and interesting lifework" (inside front cover). Contents include: Banks Want College Graduates; The Background of Banking; What Banking Is; A Career, Not a Job; The Practice of Banking; Credit; Operations; Trust Services; Investments; International Banking; Other Career Opportunities; What to do Now.

These two booklets were bound into one volume using covers from the Careers in Banking -- Students' Workbook of treatment condition E_1. The printed insert (see Appendix A) placed just inside the front cover instructed subjects that they were to choose one of the two booklets -- the one related to the amount of education they hoped to receive -- and read it with specific questions in mind (i.e., seven questions were suggested). They could read as much as they wished during the treatment session but all booklets were collected five minutes before the end of the period.

C_3 Printed general career information. The control group receiving this treatment condition was presented with general information about occupations and the importance of planning one's future career but was not given information about any particular occupation. The cover on this booklet was similar to that of booklets used in conditions E_1 and C_2. Prepared by Krumboltz and Sheppard (1965), this "Career Kit" presents 20 pages of interest-generating diagrams and cartoons illustrating printed content which is personally-oriented to the student's choice of a career. A number of questions are presented in an attempt to stimulate the reader to engage in some self-evaluative thinking (e.g., about abilities, interests, habits, personality traits) but he also receives information that "will tell you how you might start exploring your career choices" (p. 1). Each subject was allowed to progress through the "Career Kit" at his own rate of speed and all booklets were collected five minutes before the end of the treatment session.

C_4 Filler film/pseudo treatment. This "filler" film was obtained through the National Aeronautics and Space Administration's Ames Research Center in Sunnyvale, California. No active-audience participation was involved in the watching of this scientific film which N.A.S.A.'s catalog described as:

> Performance of Long Range Hypervelocity Vehicles (1958). Running time 30 minutes. Black and white prints. Dr. A. J. Eggers discusses the comparative merits of three general types of re-entry methods, the ballistic, the skipping and the gliding techniques. Comparisons among the techniques are drawn on the basis of aerodynamic heating and decelerations imposed.

Criterion Measures

The theoretical rationale expounded in the first chapter presented the concept of vocational exploratory behavior (V.E.B.) Consequently, the related methodological rationale facilitated the initiation and development of the three experimental films aimed at stimulating viewers to emit subsequent vocational exploratory behavior. Treatment materials used by subjects in groups C_1, C_2 and C_3 obviously were published for much this same reason. To insure that everyone recognized that the suggestions for further V.E.B. were not meant to be specific to banking careers only, subjects in all seven treatment conditions were told the following:

> Here are some suggestions which will demonstrate now a person could obtain more information about one specific career, banking. You could explore other vocational

> fields in similar ways (see "Instructions for Vocational Materials Session, Appendix G).

Therefore, the theoretically-based concept of V.E.B. was adopted as the dependent variable in this investigation; it was the effectiveness criterion for materials used in all seven treatment conditions.

Also presented in the first chapter was Jordaan's (1963) definition of this concept in which he assumed that V.E.B. "is capable of producing changes in a person's knowledge, behavior, attitudes, and perceptions" (p. 59). Jordaan listed 20 changes which he hypothesizes could result from a vocational exploration, including: "Changes in his interests," "Decision to continue with or abandon a course of study, preference, occupation, or course of action," "Formulation and implementation of plans for further exploration," and "Confirmation or rejection of a previously held belief: about himself, others, or some aspect of his environment" (pp. 59-60). These are the changes from Jordaan's list which were most relevant for this investigation because it appeared that some operational measure of them could be made. Indeed, attempts were made to measure the differential effects of treatment materials on subjects' occupational interests in banking, their attitudes or beliefs toward banking and the vocational exploratory activities -- including definite plans to emit such activities -- which they emitted during a time period after being presented with these materials. Since all subjects were told that they could explore other occupational fields using the suggestions which concerned exploration of careers in banking (see Appendix I), subsequent exploratory activities did not have to be banking-oriented only.

If subjects in group C_3 and C_4 showed effects similar to all other subjects, then it would appear that giving subjects non-specific vocational information -- as in condition C_3 -- or material totally irrelevant to vocational counseling -- as in condition C_4 -- is just as effective as giving them more vocationally-specific materials. Following, listed under each of the above three criteria, are the criterion measures used to define and measure them operationally in this investigation.

Occupational Interests -- Banking. English and English (1958) define the concept of interests in seven different ways preceding their definitions by the statement that "interest" is a term "of elusive meanings. It is not clear how far the several meanings given below are distinct" (p. 271). Even within vocational counseling usage of the term, there is confusion. Within this investigation, a subject was said to have an "interest" in a particular occupation or in an activity involved in that occupation if he stated a direct preference for it -- i.e., he would like that kind of work; he is thinking about entering that occupation. Thus this definition of "interest" stesses particular responses an individual would make to stimulus words -- names of occupations or activities -- which have different incentive values for him depending on his personal conception of the meaning of those words. Since such behaviors are observable, this provides an operational definition for this investigation's study of occupational interest changes.

If the correlational projects referred to in the first chapter as recent studies of career-choice developmental patterns were supplemented by experimental research designs, more definitive statements could be made about causal relationships concerning the factors which make people maintain or change their occupational interests. The present investigation attempted to see if occupational interests could be influenced to change even though there is a significant body of literature to the contrary and no experimental support for such an attempt. The stability of individual occupational interests over time has been attested to by Stordahl (1954), Powers (1956), King (1957) and Hoyt (1960). However, permanence of interests seems to be negatively correlated both with length of the time interval between testings and with age as indicated by the recently published Project TALENT data (cf. Flanagan _et al_., 1964, Chapter 6). Campbell (1966) presents further correlational evidence using the Strong Vocational Interest Blank to indicate that there is also stability of interests within occupational groups. Using the method of paired comparisons, he contrasted the interests of bankers tested in 1934 with their interests 30 years later and with the interests of an equal number of individuals currently holding the same jobs that the original group of men held in 1934.[1] These results cannot be accepted as sufficient evidence for a conclusion that bankers' occupational interests remain stable over time. Even if we conclude that there is high interest stability among male bankers, this still would not obviate the belief that students' occupational interests can be influenced to change. The possibility that students can be influenced to show more preference for banking occupations was investigated in this study and has important implications for bank personnel officers who are faced with recruitment problems.

---

[1] Campbell was unable to receive current S.V.I.B. profiles from 48 of the original 250 subjects tested by Strong in 1934. He could not locate some; others had deceased; some refused to participate.

Reference must be made to one other problem in the area of occupational interest measurement. Concern has been expressed about the undesirable lack of correspondence between "claimed" or "expressed" interests and "measured" or "inventoried" interests (Darley and Hagenah, 1955; Berdie, 1950). For example, a study conducted by Hagenah and reported in Darley and Hagenah (1955) indicated fairly consistent agreement between subjects' reports of interests in business detail, business contact and technical occupations and their scores on the respective occupational families of the S.V.I.B. However, similar high correlations did not hold for claimed and measured interests in the scientific, social service and verbal-linguistic fields. Similarly, Berdie (1950) found that inventoried interest patterns (S.V.I.B. and Kuder Preference Record) correlated between .27 and .61 with subjects' self-estimates of interest in the same occupational patterns. Berdie concluded that "the correlation between measured and self-estimated interests approximates .50" (p. 48). With the possibility of this discrepancy in mind, the writer attempted to obtain samples of both inventoried, as well as expressed, interests.

1. *The Project TALENT Interest Inventory (P.T.I.I.)*. This instrument, developed for Project TALENT (Flanagan *et al.*, 1962) was selected because it combined the specificity of the Strong Vocational Interest Blank (which takes too long to administer and score) with the efficiency of the Kuder Preference Record (which provides interest scores in categories too broad for the purpose of this study). In it, the examinee is asked to indicate the degree of interest he or she has in each of 122 occupations and 83 activities. (See Appendix B for inventory instructions, response categories, and items.) The instructions emphasized that the examinee should respond to each item as though he had the requisite training and experience for the occupation or activity and without regard for salary or social prestige. The subjects responded to each occupation or activity by indicating, on a five-point scale, whether they liked it very much, fairly well, were undecided (i.e., did not know much about it), disliked it a little, or disliked it very much. Seventeen *a priori* interest scales were extracted, including Business Management, Computation, and Office. These were the scales -- a total of 27 items were used -- which the writer decided were most relevant to banking careers and thus they were included as three of the five criteria of interest change which were available through the P.T.I.I. The other two criteria were specific occupational

items, Banker and Bank Teller. Flanagan *et al*. (1964, Chapter 6) present an extensive display and discussion of the data they have acquired by administering this inventory to an enormous sample of high school students.

2. *Job Interests List (J.I.L.)*. In order to have the subjects express their current occupational interests in a less controlled manner, the Job Interests List (see Appendix C) was constructed for this investigation. The subjects were asked to list jobs in which they would like to work -- six spaces were provided -- and then, if they were interested in a career in the field of banking, to reread their list and write the word "Banking" beside jobs at which they would like to work if they did select a banking career.

Attitudes Toward Banking. Young people seem to have a number of negative stereotyped images of banking, its personnel, working conditions and its practices. Most of these appear to be pervasive stereotypes and do not seem to be learned from actual personal experience with banks. Nevertheless, such attitudes and beliefs are no less effective in discouraging them from looking into employment opportunities in the banking area.

The Bank Attitude Questionnaire (B.A.Q., see Appendix D) was used in this investigation as the measure of subjects' attitude change resulting from exposure to the treatment conditions. Twenty statements were selected to which the subjects responded by agreeing strongly, agreeing slightly, disagreeing slightly, or disagreeing strongly.

It was fully expected that some of the subjects would not have definite opinions on all the statements but this effect should have been randomized across treatment groups. Subjects using vocational materials on banking were exposed to "evidence" which should have made them more informed respondents to this questionnaire when it was administered for the second time. The fact that the vocational materials were different should not have had a differential effect on subjects' responding since no attempt was made to relate item content of the questionnaire to some of the materials and not to others.

Sixteen items were ones used by Maccoby (1955) in a survey of banking public relations while the other four employed stereotypes which banking officials reported as ones detrimental to their personnel recruitment practices. Using the procedures adopted by Hadsell and May (1958) in their film-mediated attempt at changing opinions on the due process of law concept, the writer phrased statements so that to agree with some would represent a favorable attitude while agreement with others would be scored negatively. Thus, the effects of a response set would be counterbalanced. Appendix D also presents the weighted scores assigned to each response category for each item.

Vocational Exploratory Behavior Inventory (V.E.B.I.). This instrument was used to record the number of vocational explorato responses the subjects reported making during the month subseque to the treatment presentations (see Appendix E for directions, questions, and supplementary data forms of the V.E.B.I.). The

It was fully expected that some of the subjects would not have definite opinions on all the statements but this effect should have been randomized across treatment groups. Subjects using vocational materials on banking were exposed to "evidence" which should have made them more informed respondents to this questionnaire when it was administered for the second time. The fact that the vocational materials were different should not have had a differential effect on subjects' responding since no attempt was made to relate item content of the questionnaire to some of the materials and not to others.

Sixteen items were ones used by Maccoby (1955) in a survey of banking public relations while the other four employed stereotypes which banking officials reported as ones detrimental to their personnel recruitment practices. Using the procedures adopted by Hadsell and May (1958) in their film-mediated attempt at changing opinions on the due process of law concept, the writer phrased statements so that to agree with some would represent a favorable attitude while agreement with others would be scored negatively. Thus, the effects of a response set would be counterbalanced. Appendix D also presents the weighted scores assigned to each response category for each item.

Vocational Exploratory Behavior Inventory (V.E.B.I.). This instrument was used to record the number of vocational exploratory responses the subjects reported making during the month subsequent to the treatment presentations (see Appendix E for directions, questions, and supplementary data forms of the V.E.B.I.). The directions each subject received helped him recall that one month ago "you studied some of the vocational materials -- films and booklets -- which we presented to you."

The experimental assistants administering the inventory attempted to explain that subjects should report activities which were engaged in this month only; in this way only activities which could have resulted from their participation in this project would be reported.

To help the subjects identify vocational exploratory responses they had made, they were asked specific questions falling in broad categories such as:

1. Had they talked with people about occupations, schools or colleges?

2. Had they obtained, looked at, or read any information on occupations, schools or colleges?

3. Had they watched attentively any T.V. programs, fair exhibits or movies, or heard any radio programs on occupations, schools or colleges?

4. Had they made any on-the-job visits, or made definite plans to do this, in order to see what occupations were like?

5. Had they made visitations to colleges or schools or made definite plans to do so?

6. Had they looked into, or made definite plans to look into, getting a summer or part-time job connected with the occupations they were considering?

7. Had they taken, or made definite plans to take, tests so that they could find out more about their interests, abilities or achievements?

8. Had they experienced a change in their occupational interests which was leading them to consider changing their course of high school study?

Each subject's score on this inventory represented the number of exploratory responses he said he made and for which he could provide supportive information. Such information was obtained by having the subject complete an extra form (see Appendix E) for each exploratory response he reported. Specific information was requested and the necessity of an appropriate date was maintained. This procedure was implemented in order to assure accurate reports of the past behavior.

This type of criterion measure has been found consistently to be a sensitive instrument in earlier studies which have successfully used it (cf. Krumboltz and Schroeder, 1965; Krumboltz and Thoresen, 1964; Thoresen, Krumboltz and Varenhorst, 1965). However, these studies used individual interviews rather than group administration of this instrument. Krumboltz and Schroeder checked on the accuracy of their subjects' reports of "information seeking behavior" by randomly selecting one-sixth of their subjects and attempting to verify all reported activities. Twenty-five out of thirty-four responses were confirmed, nine were unconfirmable, and none were proven false. Krumboltz and Thoresen (1964) followed up on eighty-five responses reported by eighteen subjects and confirmed seventy-nine of them, while the other six were unconfirmable.

There was no reason to believe that the self reports used in the present investigation would be any less valid even though small group, rather than individual interview, administration of the V.E.B.I. was employed. The group procedures were used in order to standardize administration of the inventories and to complete the administration of the tests on the same day within each school. Three proctors were used for all subjects and all three worked with one group of subjects at a time. Krumboltz and Sheppard (1966) used a similar group administration procedure and replicated the above findings concerning the veracity of self-reported exploratory activities.

EXPERIMENTAL PROCEDURES

Experimental Schedule

The various phases of the experiment were completed as follows:

1. Week of April 18, 1966 -- first testing session in both schools. Pretests administered included: (a) P.T.I.I., (b) J.I.L., and (c) B.A.Q.
2. April 26, 1966 -- administration of treatment conditions.
3. Week of May 2, 1966 -- second testing session in both schools. Posttests administered involved the same three tests used in the first session.

4. Week of May 23, 1966 -- administration of the one month followup in both schools. The V.E.B.I. was presented.

Testing Procedures

In all three testing sessions, test administrators had no knowledge of what treatment conditions the subjects had been assigned. Also, administrators in the first two sessions used standardized instructions (see Appendix F) which specified procedures and asked them to read all statements to the students just as they were printed. At no time throughout the study were the subjects told that this was an experiment. They were instructed that this "Study of Vocational Tests and Materials" was attempting "to study old and new ideas on tests and materials" (see Appendix F). Both the pretest and posttest sessions lasted for a complete 50 minute class period. The students were allowed to proceed on their own but were asked to do the tests in order; all managed to complete the pretests within that time period. The range of time for each test was 20-25 minutes for the P.T.I.I., 5-10 minutes for the J.I.L., and 10-15 minutes for the B.A.Q. Less time was necessary for the posttest sessions since the subjects completed the tests much faster the second time.

Two research "interviewers" helped the writer administer the V.E.B.I. in an attempt to proctor the subjects as closely as possible so that an individual interview was approximated if the subjects needed assistance. One of the interviewers read the "Directions for the Student" with each group of students, answered any questions, and allowed the subjects to proceed at their own speed. Flexible amounts of time were available to each subject, therefore he could leave as soon as he had completed the V.E.B.I., but only after he had reviewed it with one of the interviewers. It took one full school day at each school to administer this followup measure to groups of between 15 and 20 students. Absentees were administered the inventory as soon as possible by two of the same three interviewers.

Treatment Administration Procedures

Instructions (see Appendix G) were printed for each of the four research assistants who were employed to administer the treatment procedures. Reading from the sheet of instructions, they informed all the subjects that "we are interested in your reactions to some educational and vocational materials" and then they presented their respective materials for the rest of that class period. In each school, two consecutive class periods were used, with four treatments presented the first period and three the second. The administration at both schools was completed during the same day.

In order to give the subjects the impression that they were actually giving their "reactions", each one completed a three-question "Student Reaction Sheet" (see Appendix H) as soon as the materials had been presented. This instrument was also used as an attendance record. The subjects' reactions were analyzed even though no hypothesis had been stated concerning the direction of the results.

After the Reaction Sheets had been collected, each student was given a copy of "Suggestions to the Student" (see Appendix I) which for all groups except E_1 and E_2 was a one-page sheet reiterating the suggestions made by the counselor in the experimental films. Alternative ways of exploring careers in banks were suggested as examples of how any occupational field could be explored. This suggestion sheet represented an attempt to insure that all subjects received notification of the same ideas for vocational exploration. Subjects in treatment groups E_1 and E_2 received a two-page handout; one page was this suggestion sheet while the other page outlined answers for the questions to which the subjects had responded during their separate film presentations.

Statistical Procedures

All the criterion measures were scored and the data recorded by clerical assistants who had no knowledge of the treatment condition experienced by each subject. The only instrument which involved some subjective evaluation was the V.E.B.I., therefore one person scored all responses on the this criterion measure, with the writer making periodic reliability checks by scoring a series of tests and comparing his evaluations to those of the regular evaluator. No problem of scoring inconsistency appeared and no attempt was made to compute a reliability score. The following specific scoring procedures were used:

1. Job Interests List. Simple pretest and posttest frequency counts were made of the times each subject

8

wrote the word "Banking" to signify an occupational interest.

2. Project TALENT Interest Inventory. Each subject's responses to each of the 27 items of most concern were coded on a five-point scale (e.g., the response "A" represented a high degree of interest and was assigned a score of five; while "E" was assigned a score of one) and totaled separately for their respective scales (i.e., Business Management, Computation, and Office). This process was duplicated for pretest and posttest scores. Separate records were also made of each subject's pretest and posttest score on the "Banker" and "Bank Teller" items. Therefore, five separate criterion scores were available from each administration of the P.T.I.I.
3. Bank Attitude Questionnaire. Using the coded scores presented in Appendix D (i.e., four points for most favorable attitude toward banking; one point for least favorable), each subject's total score was calculated by adding the points he accumulated on the 20 items. The process was repeated for pretest and posttest results.
4. Vocational Exploratory Behavior Inventory. Frequency counts were made of each subject's reported exploratory activities. This resulted in one score for each subject. Consistent supportive evidence accompanied by an appropriate date had to be provided by the subject before

each reported activity was counted. All subjects who had mailed the postcard in order to receive additional career information were given credit for this as an exploratory activity.

5. Student Reaction Sheet. Although it had not been implemented originally as one of the criterion measures, this instrument was included in the analysis. Subjects' responses on each of the three questions were coded -- once again using a five-point scale with response category "A" being weighted with five points -- and recorded separately. The responses on each question will be referred to as: (a) Reported interest in the materials; (b) Evaluation of the materials; (c) Anticipated exploration subsequent to materials.

These procedures resulted in data on eleven separate dependent variables, seven of which -- from the first three measures listed above -- involved pretest and posttest scores. On each of these seven variables a three-way analysis of covariance with unequal cell size and one covariant (i.e., pretest scores) was employed (cf., Scheffe, 1961, p. 207) to test all hypotheses. The covariance model was adopted in order to adjust posttest scores statistically for initial differences. A similar three-way analysis of variance with unequal cell sizes was used to analyze the single score data available from the last two criterion measures listed above. In both the covariance and the variance analyses, all data in the 7x2x2 factorial design were included as a test of all hypotheses except A, B, and C. For the test of these three hypotheses, a 2x2x2 design was chosen with the appropriate treatment data being selected. The facilities of the Stanford University Computation Center were utilized for all analyses as the BMD 05V Program (Dixon, 1964, p. 543ff) was adapted to run on the Center's I.B.M. 7090 computer.

The BMD 05V Program assumes that the input data has been drawn from a fixed-effects research model and therefore the term consistently used as the appropriate mean square for all tests of significance was the within-cell mean square. In regards to conclusions which can be made from the experimental model, Edwards (1965) has noted that

> ...if generalizations and inferences about treatments or levels not included in the experiment are to be made, then the treatments or levels investigated must be randomly selected from the population of interest (p. 301).

In this investigation, no claim has been made that the seven levels of treatment are random selections from specific treatment populations, therefore fixed selection occurred on this independent variable. No claim could be made that random selection took place on the sex dimension,therefore this has been referred to as a fixed variable too. Nor were the two schools randomly selected. An attempt was made to sample from two school populations, schools in less economically-privileged neighborhoods and schools in middle-class suburban communities, but in both cases the researcher knew something about the schools and their personnel, in advance. Thus the model used here definitely limits the generalization that can be made from results obtained. Further replication of this study's findings in randomly selected schools would be necessary before any attempts can be made at generalization across all schools.

CHAPTER III

RESULTS AND DISCUSSION

Two comments must be made concerning data presentation procedures used in this chapter. First, data on 468 variance components resulted from the statistical analyses, accompanied by the results of 380 F tests performed on all possible mean squares. If to these were added the means and standard deviations of each independent variable on each of the 11 dependent variables and then all were punctiliously reported, any modicum of meaning which could be derived from the experiment would be confounded. Therefore, only variance components which attained an F-test level of significance beyond the ten per cent level (i.e., where $p < .10$) and the respective error (within cell) components have been included in tables throughout this chapter. Nor has any attempt been made to report data on the total variance components for each of the 44 covariance and variance tests. In the following sections of this chapter results are summarized under the respective hypotheses but only 8 of the 11 dependent variables have been used as a test of each hypothesis. Since the Student Reaction Sheet was not included as one of the original criterion measures, analyses of the subjects' responses to its three questions are discussed separately under the heading of "Supplementary Data."

The second comment concerns the sample size used for each type of statistical test. Due to the fact that pretest and posttest scores for eight subjects had to be discarded because of incorrect or inadequate student responses, the covariance tests were performed on data from 262 subjects while the variance tests were based on the complete sample of 270 subjects.

Experimental Results

Three of the nine hypotheses stated in the last chapter were the ones which held the most interest in this experiment. Hypothesis A involved a comparison of the relative effectiveness of the experimental versus the control treatments, while hypotheses B and C posed similar comparisons for the active-participation films versus the passive-participation experimental film and the active-overt participation film versus the active-covert participation film, respectively. However, before these three comparisons could be performed some indication was needed that the seven treatments produced significantly different results when subjects' scores on the dependent variables were averaged over the two levels of the school factor and the two levels of the sex factor. To demonstrate an overall treatment effect the appropriate three-way analyses of covariance and variance using the basic 7x2x2 factorial design was sequentially computed on scores from eight of the eleven dependent variables. By this same procedure, it was possible to estimate main effects due to school differences (Hypothesis D) and sex differences (Hypothesis E) as well as to study the nature of diverse interaction effects (Hypotheses F through I).

Overall Main and Interaction Effects

Table 2(a) on the next page presents selected results from the analyses of covariance and variance based on all data in the 7x2x2 factorial designs for each of the eight original criteria of treatment effectiveness. Table 2(b) on the following page provides main effect means for this 7x2x2 design. A display of the means of each cell for each criteria and for each experimental design used in this investigation is presented in Appendix L. The results in Table 2(a) represent a total of 56 main and interaction effects which were statistically tested. Of the 17 variance components achieving significance at less than the ten per cent level, 14 were large enough to remain significant at the more conventional five per cent decision level. Furthermore, among these remaining 14 components, all except one signify differences due to main effects, including 4 which resulted from treatment differences, 5 from differences between the two schools and 4 from differences between the sexes.

The seven treatments produced highly significant differences in subjects' expressed and inventoried interests in banking occupations (i.e., as measured by the Job Interests List and the Project TALENT Interest Inventory respectively), modestly ($p. < .07$) significant differences in subjects' attitudes toward banking, and negligible differences in the number of post-treatment vocational exploratory activities. In spite of the non supportive results from the V.E.B.I. and two scales of the P.T.I.I. (i.e., Business Management and Computation), it was decided that since overall treatment differences had been demonstrated on a majority

TABLE 2(a)

ANALYSIS OF COVARIANCE AND VARIANCE RESULTS FOR SELECTED VARIANCE COMPONENTS FROM 7 LEVELS OF TREATMENT, 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	Source of Variation	ANALYSIS OF COVARIANCE				
		Sum of Squares	df	Mean Square	F	Level of Significance
Interests (J.I.L.)	Treatment	19.36	6	3.22	4.64	$p <.001$
	Within Cell	161.78	233	.69		
Interests (P.T.I.I.)						
Bus. Manag.	School	106.51	1	106.51	5.04	$p <.05$
	Treatment-School	276.21	6	46.04	2.18	$p <.05$
	Within Cell	4928.58	233	21.15		
Computation	School	242.22	1	242.22	10.11	$p <.005$
	Within Cell	5580.75	233	23.95		
Office	Treatment	249.69	6	41.62	3.78	$p <.005$
	School	86.11	1	86.11	7.83	$p <.01$
	Sex	68.95	1	68.95	6.27	$p <.025$
	School-Sex	30.58	1	30.58	2.77	$p <.10$
	Within Cell	2562.51	233	11.00		
Banker	Treatment	27.53	6	4.59	4.07	$p <.001$
	School	7.04	1	7.04	6.24	$p <.025$
	Sex	9.16	1	9.16	8.13	$p <.005$
	Treatment-School	13.58	6	2.26	2.01	$p <.075$
	Within Cell	262.55	233	1.13		
Bank Teller	Treatment	12.90	6	2.15	2.79	$p <.025$
	School	9.14	1	9.14	11.87	$p <.001$
	Sex	6.31	1	6.31	8.20	$p <.005$
	Within Cell	179.37	233	.75		
Attitudes (B.A.Q.)	Treatment	414.58	6	69.09	2.07	$p <.07$
	Within Cell	7793.55	233	33.44		
		ANALYSIS OF VARIANCE				
Exploratory Activities (V.E.B.I.)	Sex	43.37	1	43.37	5.52	$p <.025$
	Within Cell	1901.32	242	7.85		

NOTE: Criterion measures used include Job Interests List, Project TALENT Interest Inventory, Bank Attitude Questionnaire, and Vocational Exploratory Behavior Inventory. All cell means for all criteria represented in this table are presented in Appendix L.

TABLE 2(b)

MAIN EFFECT MEANS FROM 7 LEVELS OF TREATMENT, 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

VARIABLES	TREATMENT CONDITIONS							SCHOOLS		SEX	
	E_1	E_2	E_3	C_1	C_2	C_3	C_4	Middle Class	Lower Class	Male	Female
Expressed Interests (J.I.L.)	1.24	.87	.44	.51	.62	.33	.52	.58	.72	.39	.89
Inventoried Interests (P.T.I.I.)											
Business Management	29.53	29.32	28.28	28.62	29.85	28.35	28.89	28.33	29.73	30.18	27.85
Computation	26.99	27.02	25.81	25.02	26.90	26.17	25.75	24.83	27.83	24.67	27.73
Office	22.24	21.12	20.61	20.41	21.37	19.58	22.29	20.27	22.04	15.65	26.31
Banker	3.51	3.24	2.64	2.72	2.93	2.60	2.78	2.67	3.18	2.71	3.10
Bank Teller	3.25	3.01	2.58	2.80	2.99	2.74	2.81	2.65	3.14	2.45	3.29
Banking Attitudes (B.A.Q.)	58.93	57.52	58.32	57.59	57.28	55.26	55.59	56.83	57.64	56.01	58.37
Exploratory Activities (V.E.B.I.)	3.06	2.30	2.48	3.13	2.43	1.83	2.70	2.31	2.83	2.12	2.99
Student Reactions (S.R.S.)											
#1 - Interest in Materials	3.89	3.78	3.92	3.54	3.53	4.06	2.05	3.22	3.85	3.45	3.60
#2 - Evaluation of Materials	4.22	3.78	3.85	3.33	3.88	3.86	2.60	3.40	3.88	3.56	3.70
#3 - Anticipated Exploration	3.69	3.40	3.30	3.28	3.57	3.82	2.08	2.98	3.63	3.23	3.36

NOTE: Dependent variables 1 through 7 were administered on a pretest and posttest basis to 262 Ss. Treatment means listed for these variables are posttest means adjusted for initial score differences. School and sex means for these variables are observed posttest means. Means on dependent variables 8 through 11 are observed means from the single administration of these criteria to 270 Ss. Treatment conditions E_1, E_2 and E_3 were the active-overt, active-covert, and passive participation films respectively. C_1 and C_4 were the regular banking-career and filler films, while conditions C_2 and C_3 were the printed banking-career and printed general-career information groups.

of the eight criteria, closer study of the results produced by various treatment combinations could be attempted. To accomplish this, neither t tests for single comparisons nor methods of multiple comparison (cf., Edwards, 1965, Chapter 10) were used. Three-way covariance and variance analyses were continued because of the extensive school and sex main effects which had occurred in the analyses represented by Table 2(a).

When either school or sex main effects were found to be significant in Table 2(a), the direction of the results was consistent with one exception. When the results were averaged over all treatments and over both sexes, subjects from the high school situated in the less economically-privileged neighborhood repeatedly showed higher interest scores on the five P.T.I.I. variables than did subjects from the school in the middle-class suburban community (see Table 2(b)). Female subjects from all treatments in both schools scored higher than male subjects on the Office ($p < .025$), Banker ($p < .005$) and Bank Teller ($p < .005$) items of the P.T.I.I.

These female subjects also reported engaging in more vocational exploratory activities ($p < .025$) than did the males. There was a tendency for the same school differences to persist on the V.E.B.I. but this barely approached significance ($p < .125$). Insignificant sex and school main effects occurred on the J.I.L. and B.A.Q. criterion measures.

Experimental vs. Control Treatments (Hypothesis A).

In order to determine the relative effectiveness of the three experimental films as compared to that of the selection of materials used in the control treatment conditions, the results obtained by subjects in groups E_1, E_2 and E_3 were averaged and compared with averaged results for groups C_1, C_2, C_3 and C_4. All scores were still divided on the basis of the two levels on both the sex and the school factors. Table 3 on the following page embodies data from the covariance and variance analyses based on the resultant 2x2x2 factorial design sequentially run for each of the eight dependent variables.

Of the 15 variance components listed, 12 had mean squares which reached at least the five per cent level of significance and all of these were caused by main effect differences -- i.e., 3 resulted from treatment differences, 5 from school differences and 4 from sex differences. The 3 interaction components significant between the five and ten per cent levels were based on two scales -- Computation and Office -- of the P.T.I.I. and therefore were not consistent across the 4 criterion measures which were used.

Highly significant differences occurred between the experimental and the control treatments on three of those criterion measures, however these differences did not persist when the V.E.B.I. was used. Calculation of the average change scores for the experimental subjects and the control subjects over pre- and post-treatment administration of the three criterion measures revealed that the experimentals consistently scored higher. First, they expressed greater interest in banking occupations -- i.e., they wrote the word "Banking" on the J.I.L. an average of .46 more times on the posttest than they did on the pretest, while the

TABLE 3

ANALYSIS OF COVARIANCE AND VARIANCE RESULTS FOR SELECTED VARIANCE COMPONENTS FROM 2 LEVELS OF TREATMENT (EXPERIMENTAL vs. CONTROL), 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	Source of Variation	ANALYSIS OF COVARIANCE				
		Sum of Squares	df	Mean Square	F	Level of Significance
Interests (J.I.L.)	Treatment	7.61	1	7.61	10.20	$p < .005$
	Within Cell	188.80	253	.75		
Interests (P.T.I.I.) Bus. Manag.	School	131.41	1	131.41	6.11	$p < .025$
	Within Cell	5442.98	253	21.51		
Computation	School	246.76	1	246.76	10.26	$p < .005$
	Treatment-School-Sex	76.11	1	76.11	3.16	$p < .10$
	Within Cell	6084.17	253	24.48		
Office	School	123.07	1	123.07	10.54	$p < .005$
	Sex	68.46	1	68.46	5.87	$p < .025$
	Treatment-School	34.22	1	34.22	2.93	$p < .10$
	School-Sex	40.31	1	40.31	3.45	$p < .075$
	Within Cell	2952.57	253	11.67		
Banker	Treatment	8.41	1	8.41	7.09	$p < .01$
	School	8.04	1	8.04	6.78	$p < .01$
	Sex	9.34	1	9.34	7.88	$p < .01$
	Within Cell	299.97	253	1.18		
Bank Teller	School	9.52	1	9.52	11.89	$p < .001$
	Sex	6.40	1	6.40	7.99	$p < .01$
	Within Cell	202.53	253	.80		
Attitudes (B.A.Q.)	Treatment	184.05	1	184.05	5.40	$p < .025$
	Within Cell	8618.20	253	34.06		
		ANALYSIS OF VARIANCE				
Exploratory Activities (V.E.B.I.)	Sex	51.24	1	51.24	6.57	$p < .025$
	Within Cell	2043.87	262	7.80		

NOTE: Criterion measures used include Job Interests List, Project TALENT Interest Inventory, Bank Attitude Questionnaire, and Vocational Exploratory Behavior Inventory. All cell means for all criteria represented in this table are presented in Appendix L.

controls' average increase was .07. Secondly, they showed a -.16 average increase in positive reactions toward the P.T.I.I. item of "Banker" whereas the controls produced an average decrease of -.18 in ratings of the same occupational item. Thirdly, they had significantly greater increases in positive attitudes toward banking -- i.e., the average gain made by the experimentals on the B.A.Q. was 1.51 while the controls showed a -.12 average decrease in attitude ratings. The fact that this superiority was demonstrated on three different tests provides a most impressive test of Hypothesis A.

Active vs. Passive Film Participation (Hypothesis B).

Scores obtained by subjects in experimental groups E_1 and E_2 on each of the eight dependent variables were averaged and compared with scores achieved by the subjects in group E_3, as a test of the importance of the audience-participation variable in the experimental films. Once again, three-way analyses were performed, selected results from which are presented in Table 4.

These procedures indicated that 10 of the selected 14 variance components met significance at less than the five per cent level and 7 were beyond the one per cent level. This time the analyses failed to show reliable evidence of sex differences on any of the eight criteria except for the moderately significant ($p < .075$) difference favoring female subjects on the V.E.B.I.[1]

---

[1] Once again the same school differences tended to recur on the V.E.B.I. but not at the conventional levels of significance ($p < .125$).

TABLE 4

ANALYSIS OF COVARIANCE AND VARIANCE RESULTS FOR SELECTED VARIANCE COMPONENTS FROM 2 LEVELS OF TREATMENT (ACTIVE vs. PASSIVE FILM PARTICIPATION), 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	Source of Variation	ANALYSIS OF COVARIANCE				
		Sum of Squares	df	Mean Square	F	Level of Significance
Interests (J.I.L.)	Treatment	8.63	1	8.63	9.94	p <.005
	Treatment-Sex	2.72	1	2.72	3.13	p <.10
	Within Cell	88.53	102	.87		
Interests (P.T.I.I.)						
Bus. Manag.	School	141.37	1	141.37	8.92	p <.005
	Treatment-School	116.23	1	116.23	7.34	p <.01
	Within Cell	1615.76	102	15.84		
Computation	School	174.80	1	174.80	7.00	p <.01
	School-Sex	114.84	1	114.84	4.60	p <.05
	Within Cell	2546.78	102	24.97		
Office	School	103.60	1	103.60	10.45	p <.005
	School-Sex	61.85	1	61.85	6.24	p <.025
	Within Cell	1011.60	102	9.92		
Banker	Treatment	12.06	1	12.06	11.73	p <.001
	School	3.56	1	3.56	3.46	p <.075
	Within Cell	104.80	102	1.03		
Bank Teller	Treatment	7.59	1	7.59	10.87	p <.005
	School	3.07	1	3.07	4.40	p <.05
	Treatment-School-Sex	2.26	1	2.26	3.23	p <.10
	Within Cell	71.24	102	.70		
		ANALYSIS OF VARIANCE				
Exploratory Activities (V.E.B.I.)	Sex	22.65	1	22.65	3.82	p <.075
	Within Cell	639.85	108	5.92		

NOTE: Criterion measures used include Job Interests List, Project TALENT Interest Inventory, Bank Attitude Questionnaire, and Vocational Exploratory Behavior Inventory. All cell means for all criteria represented in this table are presented in Appendix L.

Of the 10 variance components significant at less than the five per cent level, 3 were attributable to treatment differences and 4 to school differences. The other 3 variance components resulted from first order interaction effects on the three *a priori* scales extracted from the P.T.I.I. Only one of these interactions involved treatment effects and this was a treatment-school interaction ($p < .01$) on the Business Management scale.

Impressive differences occurred between the active-participation film subjects and the passive-participation film subjects on each of the other three interest criteria. Subjects in treatments E_1 and E_2 made significantly higher gain scores on the J.I.L. measure of expressed interests (average change score of .65 compared to .08) and responded more favorably to the P.T.I.I. items which were specifically related to interest in banking occupations (average change score of .41 compared to .32 on the Banker item and .14, compared to -.38 on the Bank Teller item). Although *nonsignificant* findings resulted for treatment effects on the measures of attitude change and exploratory activies, there were trends in both cases as active-participation subjects averaged slightly larger increases in positive attitudes toward banking (i.e., 1.57 compared to 1.38) and reported slightly more vocational exploratory activities (i.e., 2.66 compared to 2.48) than did the passive-participation subjects.

Active-Overt vs. Active-Covert Film Participation (Hypothesis C)

The relative effectiveness of active-overt and active-covert problem-solving procedures used in two of the experimental film versions was tested by comparing the scores obtained by subjects in treatment groups E_1 and E_2. Using the same analysis described in previous sections, the appropriate data on the eight dependent variables was formulated into another 2x2x2 design.

Table 5 lists the results of the sequential applications of the covariance and variance tests which were performed in order to evaluate Hypothesis C. Fewer main effects produced significant variance components in this sequence of tests and no differences due to treatment influences were significant at less than the five per cent level. Consistent differences favoring overt rather than covert participation did occur on most of the eight criteria but none attained significance at conventional levels. For example, subjects in treatment E_1 expressed more interest in banking occupations (i.e., average change score of .83 compared to .49 was significant at $p = .12$ on the J.I.L.), obtained higher average gains in attitudes favorable toward banking (i.e., an average gain score of 2.43 as compared to .79[1]), and reportedly performed more vocational exploratory activities (i.e., they averaged 3.06 activities compared to 2.30 activities for group E_2 subjects[1]).

There is little significant evidence reported in Table 5 suggesting that these two modes of film participation were differentially effective in influencing subjects to change their expressed

---

[1] Both of these differences were beyond the 12.5 per cent level of significance. The V.E.B.I. result is partially reflected in the first order interaction ($p < .10$) shown in Table 5 which indicated that Ss in E_1 at the lower class school reported the greatest number of exploratory activities.

TABLE 5

ANALYSIS OF COVARIANCE AND VARIANCE RESULTS FOR SELECTED VARIANCE COMPONENTS FROM 2 LEVELS OF TREATMENT (OVERT vs. COVERT FILM PARTICIPATION), 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	Source of Variation	ANALYSIS OF COVARIANCE				
		Sum of Squares	df	Mean Square	F	Level of Significance
Interests (P.T.I.I.)						
Computation	School	148.05	1	148.05	4.83	$p <.05$
	Treatment-Sex	116.85	1	116.85	3.81	$p <.075$
	Within Cell	1992.61	65	30.66		
Office	Treatment	31.04	1	31.04	2.98	$p <.10$
	School	43.49	1	43.49	4.17	$p <.05$
	Treatment-School-Sex	36.99	1	36.99	3.54	$p <.075$
	Within Cell	677.54	65	10.42		
Bank Teller	Treatment	1.76	1	1.76	2.93	$p <.10$
	School	5.59	1	5.59	9.30	$p <.005$
	Treatment-Sex	5.27	1	5.27	8.77	$p <.005$
	Within Cell	39.06	65	.60		
Attitudes (B.A.Q.)	Treatment-School	194.69	1	194.69	5.61	$p <.025$
	Treatment-School-Sex	148.62	1	148.62	4.28	$p <.05$
	Within Cell	2256.64	65	34.72		
		ANALYSIS OF VARIANCE				
Exploratory Activities (V.E.B.I.)	School	32.82	1	32.82	5.81	$p <.025$
	Sex	29.62	1	29.62	5.24	$p <.05$
	Treatment-School	16.08	1	16.08	2.85	$p <.10$
	Within Cell	384.33	68	5.65		

NOTE: Criterion measures used include Job Interests List, Project TALENT Interest Inventory, Bank Attitude Questionnaire, and Vocational Exploratory Behavior Inventory. All cell means for all criteria represented in this table are presented in Appendix L.

or inventoried interests. One exception is the highly significant ($p < .005$) treatment-sex interaction occurring on the P.T.I.I. item of "Bank Teller." Male and female subjects in the overt-participation group displayed average change scores of .60 and 0 respectively, while those in the covert-participation group scored -.11 and .15 respectively. Therefore, on this dependent variable the active-overt participation film was most effective, but only with male subjects.

Another exception is found in the significant ($p < .025$) treatment-school and the significant ($p < .05$) second-order interactions on the B.A.Q. The first-order interaction indicated, upon inspection, that the overt-participation film was most effective but primarily in the lower-class school where the average gain in attitudes favorable to banking was 3.13 compared to -1.26 for the covert-participation film. In the middle-class school the respective average gain scores on this variable were 1.90 and 2.75. For the second-order interaction, it was found that male subjects in the overt-participation group at the lower-class school made the greatest amount of positive attitude change while the males in the covert-participation group at the other school evidenced the next highest average gain score (i.e., 7.00 compared to 5.20). The comparable sub-groups changing the least favorably on this criterion were the males and females in the covert-participation group at the lower-class school (i.e., -1.89 and -.70 respectively).

The four significant mean squares stemming from overall sex and school effects on subjects' P.T.I.I. and V.E.B.I. scores provide further indication that these are important variables influencing the degree of effectiveness achieved by the vocational materials studied here. This seems to support the use of the three-way analysis procedures which were employed throughout this investigation.

Supplementary Data

Two further statistical analyses were performed and these provided information which was tangential to the basic hypothesis-testing topic.

Student Reactions to Treatments. The Student Reaction Sheet (S.R.S., see Appendix H) was completed by each subject immediately after the treatment presentations but was not included as one of the original criteria of treatment effectiveness. Subjects' responses to each of the three questions were then subjected to four analyses of variance tests corresponding to the sequences of four statistical tests performed on all criteria at the various stages of hypothesis-testing discussed in the previous sections of this chapter. The results of these analyses are represented in Table 6 on the next page.

As indicated, 18 of the 21 variance components were significant beyond the .005 level and all of these 18 were attributable either to treatment or school main effects. In each instance of the highly significant mean squares due to school differences, subjects from the school in the less economically-privileged neighborhood reacted more favorably to the treatment materials than did the subjects from the suburban high school. This result occurred

TABLE 6

ANALYSIS OF VARIANCE RESULTS FOR SELECTED VARIANCE COMPONENTS FROM ANALYSES OF STUDENT REACTIONS TO TREATMENTS

Vari-ables (Quest-ions)	Hypotheses Tested Design Used	Source of Variation	Sum of Squares	df N=270	Mean Squares	F	Level of Signifi-cance
#1	All-7x2x2	Treatment	110.79	6	18.47	22.77	p <.001
	"	School	27.81	1	27.81	34.30	p <.001
	"	Treat-Sex	9.16	6	1.53	1.88	p <.10
	"	Within Cell	196.24	242	.81		
#2	"	Treatment	66.66	6	11.11	17.75	p <.001
	"	School	16.95	1	16.95	27.08	p <.001
	"	Within Cell	151.48	242	.62		
#3	"	Treatment	80.72	6	13.45	12.65	p <.001
	"	School	30.61	1	30.61	28.80	p <.001
	"	Within Cell	257.22	242	1.06		
#1	A - 2x2x2	Treatment	22.99	1	22.99	20.23	p <.001
	"	School	24.75	1	24.75	21.78	p <.001
	"	Within Cell	297.78	262	1.14		
#2	"	Treatment	19.91	1	19.91	25.52	p <.001
	"	School	15.78	1	15.78	20.23	p <.001
	"	Within Cell	204.37	262	.78		
#3	"	Treatment	5.78	1	5.78	4.40	p <.05
	"	School	28.70	1	28.70	21.85	p <.001
	"	Within Cell	344.17	262	1.31		
#1	B - 2x2x2	School	5.44	1	5.44	8.79	p <.005
	"	Within Cell	66.80	108	.62		
#2	"	School	8.08	1	8.08	18.07	p <.001
	"	Within Cell	48.30	108	.45		
#3	"	School	13.15	1	13.15	13.76	p <.001
	"	Within Cell	103.14	108	.96		
#1	C - 2x2x2	School	6.10	1	6.10	8.59	p <.005
	"	Sex	2.60	1	2.60	3.66	p <.075
	"	Within Cell	48.30	68	.71		
#2	"	Treatment	4.46	1	4.46	11.39	p <.005
	"	School	10.16	1	10.16	25.93	p <.001
	"	Within Cell	26.63	68	.39		
#3	"	School	14.13	1	14.13	13.29	p <.001
	"	Within Cell	72.30	68	1.06		

NOTE: Criterion measure used was Student Reaction Sheet. All cell means for all statistical analyses performed on data from this criterion are presented in Appendix L.

consistently for all three questions no matter what hypothesis was being tested. However, the highly significant treatment differences on all three questions persisted only through the testing of Hypothesis A, in which it was found that the subjects in the experimental treatment groups tended to give higher ratings on each question than did the subjects in the control groups.

No evidence was obtained of significant differences between the responses to any of the three questions when subjects in groups E_1 and E_2 were compared with subjects in group E_3. There was a trend, however, for the active-participation subjects to respond more favorably on two of the questions -- i.e., the average responses for these subjects on Questions 2 and 3 were 3.93 and 3.51 respectively, compared to 3.85 and 3.30 for passive-participation subjects. This trend was reversed on the first question which was designed to have the subjects rate their reported interest in the materials. On this question the average response for subjects in groups E_1 and E_2 was 3.84 contrasted with 3.92 for group E_3 subjects. The second and third questions on the S.R.S. represented attempts to have the subjects evaluate the treatment materials and then estimate how much subsequent vocational exploration they anticipated doing. Therefore, it appeared that subjects viewing the passive-participation version tended to rate their interest slightly higher than the interest ratings given by the active-participation subjects in response to their films but did not evaluate it as highly or believe they had been stimulated to explore as much as did their fellow subjects in groups E_1 and E_2. As noted above, these differences were trends only; they were not statistically significant.

When hypothesis C was tested with subjects' responses on these same three questions, there was a consistent trend for the overt-participation subjects to respond more favorably than the covert-participation subjects. The trend achieved significance ($p < .005$) on the second question -- i.e., subjects' evaluation of the materials -- but only approximated significance ($p < .12$) on the third question (i.e., anticipated exploration).

Intercorrelation Matrix. Table 7 presents the product-moment intercorrelations of scores on all eleven criteria used in this investigation. Since pretest as well as posttest scores on seven of these criteria were used throughout the study, these scores have been included to round out the 18x18 matrix. Because of the large sample size (N = 262 subjects), the sizes of the coefficients required for significance at the five and one per cent levels are quite small. The most pertinent results from Table 7 include the following:

1. Consistently large correlations, ranging from .57 to .90, were found between the pre- and posttest scores on each measure. The largest correlations occurred on each of the three P.T.I.I. scales (i.e., Business Management, Computation and Office) and these were the three criteria which tended to be the least effective in discriminating among the treatments. The effect of treatments is perhaps reflected in the lower pre-post

TABLE 7

INTERCORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS FOR 11 CRITERION MEASURES (PRE AND POSTTEST SCORES ON THE FIRST 7)

Criterion Measures			1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	Criterion Measures	Means	Standard Deviations
Job Interests List		Pretest	-	.59	.19	.16	.15	.18	.42	.36	.44	.43	.23	.28	.40	.42	.06	.05	.14	.09	1.	.40	.82
		Posttest		-	.25	.27	.16	.21	.37	.38	.36	.39	.30	.44	.41	.51	.18	.16	.17	.12	2.	.65	1.07
Bank Attitude Questionnaire		Pretest			-	.72	.08	.09	.27	.20	.25	.26	.16	.17	.21	.20	.07	.10	.09	.14	3.	56.66	7.38
		Posttest				-	.00	.05	.19	.13	.15	.15	.07	.16	.12	.13	.07	.12	.06	.05	4.	57.22	8.55
Project TALENT Interest Inventory	Business Management	Pretest					-	.84	.47	.47	.17	.17	.69	.45	.35	.36	.17	.09	.20	.03	5.	29.61	8.15
		Posttest						-	.48	.59	.17	.23	.62	.62	.36	.45	.19	.11	.20	.07	6.	28.98	8.44
	Computation	Pretest							-	.82	.62	.58	.50	.49	.57	.55	.22	.15	.15	.18	7.	26.21	7.82
		Posttest								-	.54	.62	.49	.60	.49	.67	.28	.21	.21	.26	8.	26.23	8.62
	Office	Pretest									-	.90	.31	.38	.54	.56	.19	.15	.15	.17	9.	21.32	7.86
		Posttest										-	.32	.45	.55	.64	.19	.13	.12	.22	10.	21.10	8.07
	Banker	Pretest											-	.57	.44	.45	.19	.11	.22	.01	11.	2.96	1.26
		Posttest												-	.51	.68	.31	.21	.28	.06	12.	2.92	1.36
	Bank Teller	Pretest													-	.66	.13	.10	.14	.13	13.	29.20	11.90
		Posttest														-	.25	.17	.22	.14	14.	28.82	12.21
Student Reaction Sheet		Question #1															-	.53	.64	.07	15.	35.27	11.44
		Question #2																-	.47	.13	16.	36.41	9.51
		Question #3																	-	.14	17.	32.82	11.83
Vocational Exploratory Behavior Inventory																				-	18.	25.23	28.12

n = 262

Correction needed
for significance:

At 5 per cent level: r=.12
At 1 per cent level: r=.20

correlations on the Banker and Bank Teller items of the P.T.I.I.

2. Expressed interests (J.I.L.) correlated rather poorly with the inventoried interests on the three P.T.I.I. scales -- i.e., ranged from .21 to .39 for posttest scores -- but slightly larger with the specific items of Banker and Bank Teller -- i.e., .44 and .51 respectively.
3. Subjects' attitudes toward banking (B.A.Q.) following the treatments were not highly correlated with their posttest scores on any of the other criteria -- e.g., the largest coefficient was .27 with J.I.L. scores.
4. Posttest P.T.I.I. intercorrelations ranged from .23 to .68 with the lowest three being Business Management -- Office, Business Management -- Bank Teller, and Banker -- Office. All the others intercorrelated between .59 and .68. The largest coefficient was .68 between Banker and Bank Teller.
5. The subjects' responses on the three S.R.S. questions correlated rather closely -- i.e., ranged from .47 to .64. The largest correlation occurred between Questions 1 and 3 -- how interested the subjects said they were in the materials and the amount of vocational exploration they anticipated emitting.
6. The number of exploratory activities (V.E.B.I.) reported by the subjects correlated weakly with each of the other ten criteria scores -- i.e., ranged from .01 to .26.

7. Subjects' ratings of the amount of vocational emploration they expected to do following the treatments (S.R.S.) correlated .14 with the number of exploratory activities they reportedly engaged in over the one month after the treatment date (V.E.B.I.)

DISCUSSION OF RESULTS

In this investigation eight criteria from four criterion measures were used to test each hypothesis. In essence, eight separate predictions were tested for each hypothesis; some predictions were confirmed, others were rejected. No attempt has been made to arrive at a general conclusion for each hypothesis. Often in the following discussion of the evidence trends in the data have been noted, not as evidence for hypothesis testing, but as premises for further research in specifiable directions.

HYPOTHESIS A: That subjects in treatment conditions E_1, E_2 and E_3 would score higher on all criteria than subjects in C_1, C_2, C_3 and C_4.

CONCLUSION: Prediction supported on three of the four criterion measures.

The findings exhibited in Table 3 indicated that subjects in the experimental treatment conditions did indeed obtain higher scores on three of the eight criteria, and these results occurred on three of the four criterion measures. The primary nonsupportive evidence was the lack of a significant difference on the V.E.B.I. Therefore, it was concluded that the prediction of

Hypothesis A was sustained for the dependent variables of expressed and inventories interests as well as for attitudes toward banking but not for the variable of frequency of vocational exploratory activities. The decision accepted was that the experimental films as a group were more effective in influencing subjects' self-reported interests and attitudes than was a group of materials which had been selected for comparison purposes. Neither group of materials demonstrated superiority in stimulating subjects' subsequent vocational exploration.

Additional evidence on student reactions to the materials (see Table 6) ratified this conclusion since it was shown that the experimental subjects differed significantly from the control subjects by reporting more interest in, and higher evaluations of, their materials, as well as anticipating a greater amount of subsequent exploratory activity.

HYPOTHESIS B: That subjects in treatment conditions E_1 and E_2 would score higher on all criteria than subjects in E_3.

CONCLUSION: Prediction supported on two of four criterion measures.

The selected results listed in Table 4 demonstrated that the predicted treatment differences did occur on the variable of expressed interests and on two of the five criteria of the variable of inventoried interests. On a third criterion -- Business Management -- from this latter variable, a significant ($p < .01$) treatment-school interaction did occur which revealed, upon inspection, that the subjects who saw the passive-participation film in the lower-class school evidenced the largest average gain in interest (1.12 compared to -3.35, 0, and -.33) of any of the comparable sub-groups on this criterion. However, the subjects who viewed this film in the other school showed the largest average loss of interest (-3.35) in Business Management occupations when the P.T.I.I. was administered one week after the film presentation. This interaction component represents the only instance of significant results which were inconsistent with this study's hypotheses concerning treatment effects. Because of the relative inability of the three P.T.I.I. scales to differentiate the effectiveness of the various treatment conditions, little further attention has been given to this interaction component just discussed.

There were no other significant findings to indicate that the films being compared here were differentially effective in influencing subjects' banking attitudes or followup activities. The most parsimonious conclusion, therefore, was that the directional prediction of Hypothesis B had been partially supported; interest changes had occurred but inconclusive results were observed on the attitude and exploratory activity variables. Supportive trends in the data were not sufficiently definite to reach statistical significance. In no instance were subjects in E_3 superior to those in E_1 and E_2. What is more, subjects in the latter groups scored higher on the B.A.Q. and the V.E.B.I. This suggests that further research may be able to demonstrate that participation procedures in vocational films can influence other aspects of viewer behavior besides their self-reports of occupational interest (i.e., measured and expressed).

The S.R.S. results did not achieve significance when analyzed under Hypothesis B even though there were trends for subjects in groups E_1 and E_2 to evaluate their films higher (i.e., question two), to anticipate more vocational exploration as a result of having seen them (i.e., question three), but not to rate their interest in the films as highly (i.e., question one) as the subjects in group E_3 did.

HYPOTHESIS C:	That subjects in treatment condition E_1 would score higher on all criteria than subjects in E_2.
CONCLUSION:	Prediction was not supported on any of the criterion measures.

The evidence discussed earlier did not permit a precise decision about the superiority of either of the active-participation films on any of the criteria. This failure to find consistent superiority of one response mode over the other replicates the results of numerous studies of overt vs. covert participation in programed learning and communication research. Many of these studies (e.g., Gropper and Lumsdaine, 1961a&b; Michael and Maccoby, 1961; Kanner and Sulzer, 1961; Maccoby, Michael and Levine, 1961) were reviewed in the first chapter of this report.

The conclusion that has been adopted is that this experiment failed to provide significant proof of a difference between the effectiveness of the active-overt participation film and that of the active-covert participation film. In other words, no evidence was available to permit a clearcut decision about the importance of overt, as opposed to covert, participation in the experimental vocational films. However two additional points must be recognized. There was a tendency for group E_1 subjects to score higher than group E_2 subjects on all the dependent variables such as expressed interests ($p < .125$), inventoried interests (i.e., Bank Teller item of P.T.I.I. significant at $p < .10$), attitudes toward banking, reported vocational exploratory activities, and favorable reactions to the films (i.e., first question significant at $p < .12$; second question at $p < .005$; third question at $p > 12.5$). Secondly, where significant interactions involving treatment effects did occur during the testing of this hypothesis, they all attested to the effectiveness of the overt-participation film. It was the most effective film on the Bank Teller criterion of interests -- but primarily with male subjects -- and on the bank attitudes criterion -- but primarily with subjects in the school from the less economically-priviledged neighborhood. On this latter criterion, it was more effective with males from the lower-class school than the covert-participation film was with any comparable sub-group of subjects. Therefore, these two points should bear out the writer's conviction that overt-participation procedures merit further investigation as critical motivational variables in vocational films.

HYPOTHESIS D: That subjects in the high school from a suburban community would score higher on all criteria than the subjects in the high school from a less economically-privileged neighborhood.

CONCLUSION: Prediction was reversed on one criterion and not supported on the others.

Evidence for the partial rejection of this hypothesis was the large number of highly significant main effects due to school differences which occurred at each stage of the hypothesis-testing procedures. As indicated by the selected results in Table 2(a), school main effects were consistent on all five P.T.I.I. criteria. Inspection of each school's scores (i.e., averaged over treatments and sex) for each of these criteria revealed that the prediction of Hypothesis D was completely reversed, thus leading to the above conclusion.

Further inspection of the school differences showed that subjects in the school from a less economically-privileged neighborhood tended ($p < .125$) to engage in more vocational exploratory activities than did subjects from the suburban school. Continued support for this reversed prediction came from S.R.S. results listed in Table 6. However, the hypothesis was neither reversed nor supported by results from the other criterion measures -- J.I.L. and B.A.Q. Since it was the writer's intuition which fostered the prediction stated in Hypothesis D. these results certainly belittle that source of predictive statements. Just why these school differences resulted is only a subject for conjecture at this point. Perhaps subjects in the lower-class school were more susceptible to influence and therefore more likely to change as a result of any minimal experimental suggestion. Perhaps they were more receptive to any type of voational-counseling attention which was provided for them (e.g., even the attention embodied in pre- and posttesting). Perhaps the subjects in the middle-class school were more college-oriented and their interest in continued education postpones any display of interest in career decisions.

HYPOTHESIS E: That the female subjects would score higher on all criteria than the male subjects.

CONCLUSION: Prediction was supported on two of the four criterion measures.

Table 2 demonstrated that significant main effects due to sex differences averaged over both schools and all treatments occurred on three P.T.I.I. criteria and on the V.E.B.I. These results were replicated only on the analysis for Hypothesis A and on the V.E.B.I. results for Hypothesis C. The subjects' reactions on the S.R.S. neither challenged nor supported Hypothesis E. In all cases where sex main effects obtained significance, the prediction of Hypothesis E was supported. The sex main effects on the V.E.B.I. replicate findings published earlier by Krumboltz and Thoresen (1964) as well as by Krumboltz and Schroeder (1965) which demonstrated that female subjects tended to engage in more information-seeking activities than did males. Their dependent variable -- information-seeking -- and the one used here -- vocational exploration -- would be closely related.

HYPOTHESES F THROUGH I: That no significant first or second order interaction effects would occur on any of the criterion measures.

CONCLUSION: The real purpose of these hypotheses was not to decide whether or not a sufficiently large number of significant interactions resulted but to focus attention on the nature of any interaction effects which did happen to occur.

Of the 18 interaction variance components listed in Tables 2 through 6, only 7 had mean squares large enough to reach at least the five per cent level of significance. Since these tables represent data on all 11 criteria for all 4 statistical designs analyzed in this investigation, it would appear that interaction effects played a minor role in this experiment.

Of the 7 remaining interaction components, 3 appear in Table 5 which represents data from the overt vs. covert film comparison. These include a treatment-sex interaction ($p < .025$) on the Bank Teller interest item as well as treatment-school ($p < .025$) and second-order interactions ($p < .05$) on the B.A.Q. The nature of all these interactions was discussed earlier in this chapter. Also discussed previously was a treatment-school interaction ($p < .005$) on the Business Management interest scale presented in Table 4 which represents data from the active vs. passive film comparison. The two other significant interaction components of Table 4 were school-sex effects on the Computation and Office scales of the P.T.I.I. These interactions indicated, upon inspection of the appropriate cell means, that male subjects at the lower-class school evidenced the greatest average gain scores (2.37 and 1.37 respectively) on both scales. Males in the middle-class school showed the greatest decrease (-1.60 on both scales) of all the comparable sub-groups on these two criteria.

The seventh, and final, significant interaction component was a treatment-school effect ($p < .05$) on the Business Management scale of the P.T.I.I. as indicated in Table 2(a). Here it was observed that subjects from the lower-class school who saw the experimental films in treatment groups E_1 and E_3 tended to be more interested, one week later, in business management jobs than did subjects in these groups in the other school or subjects from either school in any of the other treatment groups. The cell means of these sub-groups are presented in Appendix L.

Not one of these seven significant interaction components was accompanied by a significant variance component due to treatment main effects. Therefore none of the treatment main effects which attained significance in this investigation had to be interpreted in terms of first or second-order interactions. In addition, as already noted, few interaction effects achieved significance -- i.e., seven out of a possible 176 components.

Although it did not contribute to the hypothesis-testing phase of the investigation, the intercorrelation matrix displayed in Table 7 facilitated a clearer understanding of the relationships which occurred among the criterion measures. The large correlation coefficients which resulted when pretest scores on each criterion were correlated with the appropriate posttest scores provide support for the use of the analysis of covariance test throughout the statistical procedures. McNemar (1962) points out that:

> Obviously, if a variable correlates near zero with the dependent variable, it need not be controlled experimentally or statistically (p. 372).

Since the covariate (pretest) scores did correlate highly with the dependent variable (posttest scores), initial covariate differences among the treatment groups had to be controlled statistically; therefore the analysis of covariance procedures were appropriate.

The high intercorrelations of pretest and posttest scores on the three *a priori* scales of the P.T.I.I. reaffirmed the writer's conviction that these scales did not have the discriminative validity for effectively distinguishing banking occupational interests from interests in any other related family of occupations. These scales had been included as possible criteria of inventoried interests in banking occupations, not because empirical data was available specifying that they would serve this function, but more because the writer believed they would represent typical banking occupations better than would any other P.T.I.I. scales. As it turned out, the best criteria on inventoried interests in banking were the most specific ones -- i.e., the Banker and Bank Teller items. The least effective and most inconsistent criterion seemed to be the Business Management scale. It could be possible that the subjects did not realize that some of the ten items on this scale represent jobs or activities which could be found in the banking industry.

The correlation of posttest scores on the J.I.L. and the two specific items from the P.T.I.I. supports past research evidence (e.g., Darley and Hagenah, 1955; Berdie, 1950) that expressed and inventoried occupational interests often are not as highly correlated as is often assumed. Here the J.I.L. scores correlated .44 and .51 with scores on the Banker and Bank Teller items respectively. Both of these are statistically significant from zero and represent the largest coefficients obtained for these two types of interests.

It has also often been assumed that attitudes and interests are closely related. This assumption was not supported in the context of the current evidence since subjects' attitudes toward banking did not correlate highly with their expressed or inventoried interests in banking occupations. The largest of these correlations was that of .25 between attitude ratings and expressed occupational interests. Perhaps this could be considered as evidence that attitudes toward an industry do not necessarily correlate closely with interests in the occupations of that industry. If this is true, it challenges the writer's assumption that students' negative images of banking, its personnel, working conditions and practices, often are effective in discouraging them from looking into banking employment opportunities.

Finally, a low correlation of .14 was found between subjects' ratings of the amount of vocational exploration they anticipated emitting after the treatment sessions (third question, S.R.S.) and the number of activities they reported one month later (V.E.B.I.). This finding can be interpreted in a number of possible ways. Subjects may not have understood the meaning of the third question on the S.R.S. Then again, perhaps they did not all define the response categories in the same way -- i.e., what constitutes "a lot" of exploration for one subject may be considered "a little" by another, even though they both engage in the same amount of exploration. The V.E.B.I. may not have sampled the type of behavior the students expected to emit. The treatment conditions may have had latent effects on the subjects. Since their anticipated behavior did not correlate significantly with their reported behavior, a number of them must have engaged in more, or less, behavior than they had expected. Perhaps students of this age level are not accurate predictors of such future behavior.

In concluding this chapter, reference must be made to additional statistical analyses which were performed in order to check on one of the writer's procedural assumptions. To test Hypothesis A, the three experimental films were grouped together and the average of their results was compared with the averaged results of the four control treatments. The control materials were not used in subsequent treatment comparisons. In combining the results from these four control groups, it was assumed that

that there would be few, if any, significant differences between the effects produced by any two control treatments. The writer had anticipated -- but not formally hypothesized -- that there would be non significant differential effects among these treatments with degree of effectiveness increasing from group C_1 through group C_4.

As a test of the assumption that these control treatments would not produce significantly different results, eight one-way analyses of variance -- one for each of the eight basic criteria -- were performed. All possible pairs of means for each criterion were then subjected to t tests of significance. For the seven pretest-posttest criteria, adjusted mean scores were used.

Out of a total of 48 t tests, only six results obtained significance at less than the five per cent level. Subjects who viewed the filler film showed more interest in office jobs than either subjects who saw the regular banking career films ($p < .025$) or subjects who read the general career information ($p < .001$). They also reported more vocational exploratory activities ($p < .05$) than did subjects in this latter group. Subjects who saw the regular banking career films evidenced more favorable attitudes toward banking ($p < .05$) and reportedly engaged in more vocational exploratory activities ($p < .05$) than did the subjects who used the general career information booklets. Finally, subjects who read the banking career information demonstrated more interest in office jobs ($p < .025$) than did those who read the general career information.

The fact that there were so few significant differences seems to support the writer's assumption that non significant differences among the control groups would be obtained. One criterion measure which did demonstrate significant differences among the control groups was the S.R.S. For example, subjects in group C_4 consistently rated the filler film lower on all three questions than subjects in any of the other three control groups rated their materials. All of the nine possible comparisons of C_4 subjects with these other control subjects were significant beyond the .1 per cent level. These findings were not regarded as a challenge to the writer's assumption since the S.R.S. was not included as one of the original criterion measures. Besides, it was anticipated that if the S.R.S. had discriminative validity the subjects in C_4 would rate the filler film lower on the three questions because it contained material which was irrelevant to the vocational purposes of this study.

CHAPTER IV

SUMMARY, CONCLUSIONS AND IMPLICATIONS

Effective, research-evaluated media designed to supplement individual and group procedures in educational and vocational counseling are virtually non-existent. For this investigation, a series of motivational films was developed, aimed at assisting individual decision-making in career counseling. These films were used to stimulate individuals to explore educational and vocational opportunities available to them and to gather information on the alternatives which interest them. All the films attempted to have students study specific work problems encountered by employees in one occupational field. In an effort to provide greater job-simulation, two of the films included problem-solving features which were designed to give viewers the opportunity to solve simple but realistic problems similar to those faced by the members of this occupation. The experimental phase of this study investigated the relative effectiveness of these films and other currently-accepted instruments produced for identical purposes. Comparison of the effects produced by each of the experimental films permitted conclusions about the importance of specific methodological factors which were implemented in film production.

SUMMARY

Rationale

The theoretical portion of the rationale for this study was derived primarily from decision theory and psychological analyses of exploratory behavior. A decision-making frame of references has been postulated for educational and vocational counseling. Within this context, the counselor's role was perceived as both helping the client improve his decision-making skills and serving as a resource agent who assists clients wishing to engage in exploratory and information-seeking responses. This investigation concentrated on the alternative-exploration and information-gathering phases of the vocational decision process and this response pattern of central interest was referred to as "vocational exploratory behavior" (V.E.B.).

Psychological theories of exploratory behavior contributed to an understanding of V.E.B. and fostered the belief that it is possible to determine the discriminative and reinforcing stimuli which can elicit and maintain this behavior pattern. Novel, uncertain, and perplexing stimulus patterns all have been demonstrated experimentally as being capable of eliciting human exploratory behavior. Therefore, in the development of three experimental films for this investigation, an attempt was made to elicit audience V.E.B. through the presentation of novel stimulus situations which would involve the audience in simplified versions of problems encountered by employees on-the-job in one occupational field -- banking.

Additional aspects of the theoretical rationale stemmed from social modeling theory and research as well as current counseling demands that young people need more realistic contacts with the world of work. In film production, a consistent effort was made to have the audience identify with the problems presented them.

Additional film objectives were to provide occupational information which was as accurate and as realistic as possible and to stimulate audience V.E.B.

Two of the three film versions actually requested overt and covert problem-solving participation from the audience. Viewers of all three films saw employees from five different banking jobs being confronted with five different problems for which solutions were required. However, in the active-participation versions, the viewers were asked to determine how they would solve these problems if they were the employees. In both of the active-participation versions the audiences were presented with a series of questions, which were printed on the screen in the covert-participation version and in workbooks in the overt-participation version, immediately after the problem had evolved in a bank with actual employees doing the acting. Viewers were given an appropriate response time, then the film continued and the employee "solved" the problem, therefore providing immediate feedback for the audiences. It was anticipated that the novelty and realism of the basic passive-participation film would be increased through the covert-participation procedures and still further increased through the overt-participation procedures. If this prediction was valid, the three versions should have shown differential effectiveness in capacity to stimulate audience V.E.B.

Communication research on the learning and motivational effects produced by A-V instruments used in academic settings contributed evidence on the response variable of type of audience participation -- i.e., active vs. passive participation and active-overt vs. active-covert participation. Further contributions concerned stimulus variables such as programmed problems, feedback or knowledge of correct responses, and film incentive variables which have been manipulated in films similar to the versions used here -- i.e., for the purpose of changing viewer interests, attitudes and observable behaviors.

Design

A factorial experimental design based on a fixed-effects model (cf., Edwards, 1965, pp. 301-306) was selected to test the relative effectiveness of the experimental films and a selection of other materials -- all except one of which were relevant to vocational counseling. Further tests were performed involving the experimental films only. Through these an attempt was made to compare both the effects of active versus passive audience participation as well as the effects of active-overt versus active-covert participation.

The seven treatment conditions included three experimental and four control groups as follows:

- E_1 Active-overt participation film
- E_2 Active-covert participation film
- E_3 Passive participation film

- C_1 Regular banking career films
- C_2 Printed banking career information
- C_3 Printed general career information
- C_4 Filler-film/pseudo treatment

All films were 16 mm balck-and-white sound films. All written information was bound in booklets with similar covers and bindings.

It was hypothesized that tenth grade students assigned to treatment conditions E_1, E_2 and E_3 would score higher on all criterion measures than equivalent students assigned to conditions C_1, C_2, C_3 and C_4. Similarly, it was hypothesized that E_1 and E_2 subjects would score higher than E_3 subjects; that E_1 subjects score higher than E_2 subjects; that subjects from a high school in a suburban community would score higher than subjects from a high school in a less economically-privileged neighborhood; that female subjects would score higher than male subjects; and that there would be no significant first or second order interaction effects on any of the criterion measures.

A total of 270 subjects, 132 males and 138 females, were randomly assigned to the seven treatment groups within each of the two schools, therefore resulting in a 7x2x2 complete factorial experiment with unequal replications within cells.

The criterion of treatment effectiveness was the amount of V.E.B. emitted subsequent to treatment exposure. V.E.B. was operationally defined in terms of the following dependent variables:

(1) expressed interests in banking occupations,

(2) inventoried occupational interests -- using five criteria from one inventory,

(3) attitudes toward banking, and

(4) vocational exploratory activities.

Criterion measures for the first three dependent variables were administered one week before and readministered one week after the treatment sessions. The fourth variable's measure was administered one month after the treatments. A fifth criterion, subjects' reactions to treatment materials, was administered on the day of the treatments.

All data were analyzed by three-way analysis of covariance or analysis of variance methods. Sequential runs of a computer program were made, first for scores on each criterion measure using a 7x2x2 design, and then for appropriate data in selected 2x2x2 designs for the hypotheses involving various treatment comparisons.

Results

1. Analyses of the appropriate data in a 2x2x2 design indicated that the experimental films as a group were more effective than the group of control materials in influencing subjects' expressed and inventoried interests in banking occupations, their banking attitudes, but not their subsequent vocational exploratory activities. Neither group of materials was significantly superior on the latter dependent variable.
2. Data in a second 2x2x2 design were analyzed and showed that subjects who viewed the two active-participation films scored higher on the dependent variables of expressed and inventoried interests

than did those viewing the passive-participation experimental film. On the banking attitudes and followup exploratory activities criteria, the active-participation subjects consistently scored higher but these trends were not definite enough for the results to achieve statistical significance.

3. Analyses of the appropriate data in a final 2x2x2 design failed to provide significant evidence of a difference between the effectiveness of the active-overt participation films. However, there was a tendency for the overt-participation subjects to score higher than the covert-participation subjects on measures of expressed interests ($p < .125$), inventoried interests (one of the five criteria here reached significance at $p < .10$), attitudes toward banking and reported vocational exploratory activities. In not one of three significant interaction components involving treatment effects did the covert-participation subjects excel. In the active-overt participation film group, males evidenced significantly more ($p < .005$) interest changes relative to the bank teller's job, subjects in the lower-class school made significantly greater ($p < .025$) attitude changes favorable to banking, and males in the lower-class school made significantly greater ($p < .05$) banking attitude changes than did subjects in comparable sub-groups.

4. Analyses of the subjects' personal reactions to the treatments provided support for all the hypotheses except that significant sex differences averaged across treatments and schools did not occur, nor were the active-participation films significantly superior to the passive-participation film.

5. Analyses based on data in the 7x2x2 design produced the following findings:

   (a) There were significant school differences in subjects' inventoried interests with subjects from the suburban, middle-class school responding less favorably than those in the other school. This finding directly reversed the prediction made in the original hypothesis.

   (b) There were significant sex differences in subjects' inventoried interests and one-month vocational exploratory activities. As had been predicted, female subjects did score higher than male subjects.

   (c) There was only one interaction effect which was significant at less than five per cent level. This was treatment-school interaction on one of the inventoried interests' criteria. A total of five first-order and one second-order interaction components achieved significance on two of the three 2x2x2 designs. These findings contested the null hypotheses which predicted that insignificant interactions would be obtained.

CONCLUSIONS

This study's objectives were to make research decisions about the effectiveness of specific film factors which were derived from an identifiable and theoretical methodological rationale. Reiterating Lumsdaine (1963), the author repeats that this experiment was conducted "to establish that a sufficient range of effects can be achieved, to insure that a methodology can profitably be further pursued along similar lines..." (p. 598).

Within this context then, the following conclusions seem warranted:

1. Subjects who viewed the experimental films developed for this investigation showed higher interest (expressed and inventoried) in banking occupations and more favorable attitudes toward banking on followup tests given one week later than did comparable control subjects who were presented with a variety of other materials -- films and booklets. Subjects' personal reactions to the treatment materials supported this conclusion.
2. Subjects who were asked to make decisions on a series of banking problems at various points during the experimental films evidenced higher interest (expressed and inventoried) in banking occupations on followup

tests given one week later than did comparable subjects who watched a virtually identical film not requiring this active participation.

3. Subjects who were asked to record their decisions in booklets during one version of the experimental films did not differ significantly on any of the dependent variables from comparable subjects who were asked to "think about" their decisions. However, there were consistent but non significant trends with the covert responders displaying higher interest (expressed and inventoried) in banking occupations as well as more favorable attitudes toward banking on followup tests given one week later and, one month later, they reported more vocational exploratory activities as having occurred during that month than did the overt responders. Subjects' personal reactions to the treatment materials partially supported this conclusion.
4. Subjects in the high school from the less economically-privileged neighborhood showed higher inventoried interest in banking occupations than did subjects from the suburban, middle-class school.
5. Female subjects evidenced higher inventoried interest in banking occupations on a followup test given one week later and, one month later, they reported more vocational exploratory activities than did male subjects.

6. Of the seven significant first and second-order interaction effects, those involving treatment effects suggest the following conclusions:

   (a) The active-overt participation and the passive participation experimental films generated greater interest in business management occupations among subjects in the lower-class school than did any of the other treatment materials.

   (b) The active-overt participation film generated greater interest in the bank teller job among male subjects than did the active-covert participation film, but among female subjects the differences between the effects of these two films were negligible.

   (c) The active-overt participation film generated more favorable attitudes toward banking among the subjects in the lower-class school than did the active-covert participation film. However, among subjects in the middle-class school the films were about equally effective.

   (d) The active-overt participation film generated more favorable attitudes toward banking among male and female subjects in the lower-class school and among females in the middle-class school than did the active-covert participation film. However, the active-covert participation film was much more effective with males in the middle-class school.

(e) The passive-participation experimental film generated more interest in business management occupations among subjects in the lower-class school than did the active-participation films. However, the active-participation films were more effective with subjects in the middle-class school than was the passive-participation film.

DISCUSSION

1. The technique of getting the subjects involved through problem-solving procedures certainly merits further attention in the development of vocational films. Whether the type of audience participation in these vocational films was active-overt or active-covert seemed to be unimportant. Nevertheless, the impressive body of non significant trends supporting overt-participation procedures in the experimental films suggests that further research may provide more definitive evidence supporting this response mode.
2. None of these conclusions was strongly supported by data on the one-month followup measure of subjects' vocational exploratory activities. This attempt to determine whether or not the various treatment materials produced different observable behavior effects proved to be disappointing. It could be that the experimental films were not powerful enough to influence observable

behavior change even though self-reported interest and attitude change occurred. Also, it could be that one month is too long a period of time to wait for the administration of this followup measure. Perhaps the subjects tended to emit exploratory activities soon after treatment exposure and, one month later, had difficulty recalling these activities. On the other hand, perhaps a more sensitive instrument is necessary in order to measure subsequent behavior which is specifically relevant to film content. There is also the possibility that attitude and interest changes are unrelated to observable behavior change. If such is the case, a value decision evolves for the film producer. He must decide what type of influence he wants the film to have and then orient film content toward that objective.

3. A particularly encouraging finding was that the treatment materials generally were more successful with subjects from the high school in the less economically-privileged neighborhood. Counselors in schools like this invariably have experienced difficulty motivating young people to take advantage of job training opportunities, to continue their educations, to see the world of work realistically, and to explore their occupational potentialities. Then again, perhaps this finding could have occurred because the subjects in the

middle class school may have been more college-oriented than these subjects.[1] Because they are interested in continued education, maybe they tended to delay thinking about occupational decisions and therefore emitted less V.E.B. when stimulated than did the subjects in the lower class school. Further research must attempt to crossvalidate this finding with other subjects from other similar schools before more extensive generalizations about school differences can be attempted.

4. The results which demonstrated that the experimental films were less effective with male subjects and with subjects from the suburban, middle-class high school suggest at least two conclusions. If future films are [illegible] this type of school, they may have to be more closely "tailored" to the occupational and educational interests of these target populations. For example, perhaps more emphasis must be placed on college-oriented jobs within an occupational field. Secondly, many young people hold negatively stereotyped images regarding banking occupations, and these stereotypes seem particularly prevalent among males and students from schools which are predominantly college-oriented. If this opinion is true, these stereotypes partially could have

---

[1] No data were collected relevant to this comment.

accounted for the results. The veracity of this statement could be tested by implementing the same specific factors of film production in other vocational films which focus on occupational fields other than banking -- ones which are generally more acceptable to students.

5. It was found that expressed occupational interests did not correlate highly with inventoried occupational interest, nor did the extent of subjects' anticipated activities relate closely to their performed activities. These findings have implications for researchers who plan this type of study in the area of vocational and educational counseling.

6. The results of this investigation seem to lend some support to the belief that vocational development processes of young people can be influenced -- at least temporarily. Just how permanent will be the V.E.B. changes evidenced by these subjects was not a concern of this study and therefore no longitudinal data have been collected. Nevertheless, this could be the object of future investigations. The available results do suggest that Borow (1964) may have been quite correct when he concluded that the

> ...career and the degree of effectiveness with which one occupies it are potentially modifiable by systematic interposition of stimulus conditions of known value in earlier life, as well as by counseling and job training later on.... Research yet to come may

> well lay stress upon the conditions under which the developmental processes requisite to the assumption of an effective adult occupational role can be accelerated (p. 378).

IMPLICATIONS FOR FURTHER RESEARCH

1. Another experiment should be conducted using different schools selected from the same two populations. This time a greater attempt should be made to select the schools randomly. This experiment should include students from other academic courses besides typing -- just in case this course does enroll a certain type of student -- and from grades other than the tenth.

   If further research shows that the experimental films are more effective at one grade level than at another, attempts could be made to use the same film but to change the nature of the questions presen in the active-overt and active-covert versions. F example, for the higher grades -- including junior college -- the same film content may still have equal motivational value if more open-ended, rathe than true-and-false, responses are requested to ea question. More involved questions could be asked about the problems presented in the films.

2. The active-overt and active-covert participation f should be researched in a more rigorously controll experimental design -- perhaps one in which no oth treatment materials are used. It is the writer's

belief that the data trends which resulted in this study would reach statistical significance with further experimentation with larger N's. Perhaps a more sensitive study would be able to show this. For example, if there was less opportunity for interaction among the subjects after the treatment presentations, clearer decisions could be made about treatment effects. The seven treatment conditions of the present investigation presented too much opportunity for subject interaction but the large number of treatment groups was necessary for this first phase of experimentation.

3. Even if the active-overt participation film is of superior effectiveness the costs anticipated from its field use would have to be considered in making decisions about its utility. Production costs of the workbooks could be excessive. However, the writer believes its benefits may minimize these costs, especially when the versatility of this version is considered. Additional vocational information can be presented in the workbooks, thus supplementing that which the film presents. The workbooks could be produced in a series -- a different set for each specific target population; each set with different questions and information. This versality could not be attained through the active-covert participation film.

4. Field testing should follow these subsequent stages of controlled experimental research. In the field stage, all film versions could be tested in a manner closer to that which was intended for the practical use of any of the experimental film versions. Regular counselors and teachers should handle the presentation, students should be allowed to keep the workbook from the overt-participation version, a counselor's kit supplying supplementary banking-career information and suggestions on how to help students should be supplied with each film, and students should be given time to discuss the films and to ask questions about film content. The criterion measures used at this stage may have to be questionnaires only.
5. If the participation procedures continue to prove effective in further research with these banking-career films, further attempts should be made to implement them in vocational films focusing on occupational fields other than banking. Even if these procedures do not hold up in future experimentation, this suggestion if implemented may demonstrate that the procedures are effective with other occupational fields -- i.e., perhaps it is very difficult to stimulate students to look into banking-career opportunities.
6. Even though the present investigation was not successful in using the V.E.B.I., the attempt involved seems

to be desirable for further research. The ultimate objective of vocational materials is to influence student behavior -- not just their attitudes and interests. In future it would seem wise to use an inventory which asks questions more specifically relevant to the film content. The V.E.B.I. involved questions about any educational or vocational activity the subjects had performed. Perhaps a more obvious attempt should be made to ask the subjects to recall what they had done as a direct result of treatment exposure. Also, it could be that group administration of a criterion measure like the V.E.B.I. is not as sensitive as individual administration of it.

In the present study, a county-wide career exhibition held about one month before the experiment could have influenced the subjects' reactions in this experiment. This could explain why even the subjects in the "filler-film/pseudo treatment" group emitted as many vocational exploratory activities as did subjects in any of the experimental groups. Future research should attempt to make wiser scheduling decisions.

Finally, perhaps the use of a pretesting procedure also confounded some of the results. Pretesting alone may be sufficient to motivate control subjects to explore general educational and vocational opportunities, but not to make occupational interest or attitude changes which are specifically relevant to some of the treatment materials. This is referred to as "treatment-testing interaction" (cf. Campbell and Stanley, 1963, pp. 178ff). This problem could be circumvented quite easily by including in future research some groups which are pretested and other groups which experience the same experimental effects except the pretest administration.

7. Further vocational research should continue to measure expressed as well as inventoried occupational interests unless one of these is a preferred criterion. If inventoried interest ratings are used, the criteria should be the specific items related to the occupations discussed in the materials rather than scales intuitively believed to be relevant to these occupations.
8. If significant school effects persist in future research in this area, closer investigation should be made of possible determinants. One possible factor, difference in college-orientation, was already suggested in the previous section. Intelligence differences also could be instrumental in causing these school differences, therefore intelligence test scores could be used as an additional covariate in future projects.
9. Future vocational research with active-participation films, especially field studies, should give more attention to the variable of teacher or counselor competence in using these films. Films like these

essentially can be self-contained but when they are utilized in the actual school setting it is highly probable that an inadequate presentation or an inappropriate setting may confound any benefit which could accrue from their use. For example, the person presenting these films must be aware that someone should accept responsibility for assisting students whose interest has been stimulated; students who may wish to engage in further vocational exploratory activities. There may be a critical interaction effect between user and instrument in the presentation of this type of vocational film. May and Lumsdaine (1958) have noted that there "is some evidence that this interaction effect is operative in the use of films for arousing interest in a subject and motivating subsequent learning activities" (p. 317). The interaction's nature and importance warrants further research.

BIBLIOGRAPHY

American Bankers Association. *National A.B.A. Film Program*. New York: Public Relations Council, American Bankers Association, 1958.

American Bankers Association. *Future unlimited: Career opportunities in banking for high school graduates*. New York: The American Bankers Association, 1960.

American Bankers Association. *Banking: A career for today and tomorrow*. New York: The American Bankers Association, 1963.

Arons, L., & May, M.A. (Eds.) *Television and human behavior*. New York: Appleton-Century-Crofts, 1963.

Bandura, A. Influence of model's reinforcement contingencies on the acquisition of imitative responses. *Journal of Personality and Social Psychology*, 1965, 1, 589-595.

Bandura, A. Vicarious processes: A case of no-trial learning. In L. Berkowitz (Ed.), *Advances in experimental social psychology*. New York: Academic Press, 1965, Vol. 2. Pp. 1-55.

Bandura, A., & Walters, R.H. *Social learning and personality development*. New York: Holt, Rinehart and Winston, 1963.

Beilin, H. Discussion (of the Super, Tiedeman and Hall papers). *Personnel and Guidance Journal*, 1963, 41, 780-782.

Berdie, R.F. Scores on the S.V.I.B. and the K.P.R. in relation to self-ratings. *Journal of Applied Psychology*, 1950, 34, 42-49.

Berdie, R.F. Aptitude, achievement, interest and personality tests: A longitudinal comparison. *Journal of Applied Psychology*, 1955, 39, 103-114.

Berlyne, D.E. A theory of human curiosity. *The British Journal of Psychology*, 1954, 45, 180-191 (a).

Berlyne, D.E. An experimental study in human curiosity. *The British Journal of Psychology*, 1954, 45, 256-265 (b).

Berlyne, D.E. Conflict and information theory variables as determinants of human perceptual curiosity. *Journal of Experimental Psychology*, 1957, 53, 399-404.

Berlyne, D.E. *Conflict, arousal and curiosity*. New York: McGraw-Hill Co., 1960.

Borow, H. *Man in a world at work*. Boston: Houghton Mifflin Co., 1964.

Brayfield, A.H., & Crites, J.O. Research on vocational guidance: Status and prospect. In H. Borow, *Man in a world at work*. Boston: Houghton Mifflin Co., 1964. Pp. 310-340.

Bruner, J.S. Some theorems on instruction illustrated with reference to mathematics. In E.R. Hilgard (Ed.), *Theories of learning and instruction*. Chicago: The University of Chicago Press, 1964. Pp. 306-335.

Campbell, D.P. Stability of interests within an occupation over thirty years. *Journal of Applied Psychology*, 1966, 50, 51-56.

Campbell, D.T., & Stanley, J.C. Experimental and quasi-experimental designs for research on teaching. In N.L. Gage (Ed.), *Handbook of research on teaching*. Chicago: Rand-McNally & Co., 1963. Pp. 171-246.

Carpenter, C.R., & Greenhill, L.P. *Comparative research on methods and media for presenting programed courses in mathematics and English*. University Park, Pennsylvania: The Pennsylvania State University, 1963.

Cronbach, L.J., & Gleser, G.C. *Psychological tests and personnel decisions*. University of Illinois Press, 1957.

Darley, J.G., & Hagenah, T. *Vocational interest measurement*. Minneapolis: University of Minnesota Press, 1955.

Dixon, W.J. (Ed.) *Biomedical computer programs*. Los Angeles: Health Sciences and Computing Facility, 1964.

Edwards, A.L. *Experimental design in psychological research*. New York: Holt, Rinehart and Winston, 1965.

English, H.B., & English, A.C. *A comprehensive dictionary of psychological and psychoanalytical terms*. New York: Longmans, Green & Co., 1958.

Flanagan, J.C., Dailey, J.T., Shaycoft, M.F., Gorham, W.A., Orr, D.B., & Goldberg, I. *Design for a study of American youth*. Boston: Houghton Mifflin, 1962.

Flanagan, J.C., Davis, F.B., Dailey, J.T., Shaycoft, M.F., Orr, D.B., Goldberg, I., & Neyman, C.A. Jr. *Project TALENT: The American high school student. Final report*. University of Pittsburgh, Cooperative Research Project No. 635, United States Office of Education, 1964.

Frankl, V. *Man's search for meaning: An introduction to logotherapy*. New York: Washington Square Press, 1963.

Fromm, E. *Escape from freedom*. New York: Rinehart & Co., 1941.

Gelatt, H.B. Decision-making: A conceptual frame of reference for counseling. *Journal of Counseling Psychology*, 1962, 9, 240-245.

Ginzberg, E., Ginsburg, S.W., Axelrad, S., & Herma, J.L. *Occupational choice: An approach to a general theory*. New York: Columbia University Press, 1951.

Goldman, L. *Using tests in counseling*. New York: Appleton-Century-Crofts, 1961.

Gropper, G.L., & Lumsdaine, A.A. *An experimental evaluation of the contribution of sequencing, pretesting, and active student responses to the effectiveness of "Programmed" T.V. instruction.* Report No. 3, Studies in Televised Instruction. Pittsburgh: Pittsburgh Educational T.V. Stations WQED-WQEX and American Institute for Research, 1961 (a).

Gropper, G.L., & Lumsdaine, A.A. *The use of student response to improve televised instruction: An overview*. Report No. 7, Studies in Televised Instruction. Pittsburgh: Pittsburgh Educational T.V. Stations WQED-WQEX and American Institute for Research, 1961 (b).

Hadsell, R.S., & May, M.A. Changes in attitude toward due process of law. In M.A. May and A.A. Lumsdaine (Eds.), *Learning from films*. New Haven: Yale University Press, 1958. Pp. 228-244.

Harlow, H.F. Motivation as a factor in the acquisition of new responses. In *Current theory and research in motivation: A symposium*. Lincoln, Nebraska: University of Nebraska Press, 1953.

Holland, J.L. Major problems of research on vocational behavior. In H. Borow (Ed.), *Man in a world at work*. Boston: Houghton Mifflin, 1964. Pp. 259-284.

Hovland, C.I., Lumsdaine, A.A., & Sheffield, F.D. *Experiments on mass communication*. Princeton: Princeton University Press, 1949.

Hoyt, D.P. Measurement and prediction of the permanence of interests. In W.L. Layton (Ed.), *The Strong Vocational Interest Blank: Research and uses.* Minneapolis: University of Minnesota Press, 1960. Pp. 93-103.

Jordaan, J.P. Exploratory behavior: The formation of self and occupational concepts. In D.E. Super *et al.*, *Career development: Self-concept theory*. New York: College Entrance Examination Board, 1963. Pp. 42-78.

Kanner, J.H., & Sulzer, R.L. Overt and covert rehearsal of fifty per cent versus one hundred per cent of the material in film learning. In A.A. Lumsdaine (Ed.), *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. Pp. 427-441.

Kantor, B.R. Effectiveness of inserted questions in instructional films. *Audio-Visual Communication Review*, 1960, 8, 104-108.

Kaplan, R. Teaching problem-solving with television to college freshmen in health education. Unpublished Doctoral Dissertation, Ohio State University, Columbus, 1962.

Kimble, G.A., & Wulff, J.J. The effectiveness of instruction in reading a scale as influenced by the relative amounts of demonstration and problem-solving practice. In A.A. Lumsdaine (Ed), *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. Pp. 227-239 (a).

Kimble, G.A., & Wulff, J.J. Response guidance as a factor in the value of student participation in film instruction. In A.A. Lumsdaine (Ed.), *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. Pp. 215-226 (b).

King, L.A. Stability measures of S.V.I.B. profiles. *Journal of Applied Psychology*, 1957, 41, 143-147.

Krumboltz, J.D., & Schroeder, W.W. The effect of reinforcement counseling and model-reinforcement counseling on information-seeking behavior of high-school students. *Personnel and Guidance Journal*, 1965, 44, 19-26.

Krumboltz, J.D., & Sheppard, L.E. *Career kit*. Stanford, California: School of Education, Stanford University, 1965.

Krumboltz, J.D., & Sheppard, L.E. The effect of a vocational problem-solving experience on career exploration and interest. Unpublished mimeograph, Stanford University, 1966.

Krumboltz, J.D., & Thoresen, C.E. The effect of behavioral counseling in group and individual settings on information-seeking behavior. *Journal of Counseling Psychology*, 1964, 11, 324-333.

Krumboltz, J.D., & Weisman, R.G. The effect of overt versus covert responding to programed instruction on immediate and delayed retention. *Journal of Educational Psychology*, 1962, 53, 89-92.

Lumsdaine, A.A. Gauging the effects of films on reading interests. In M.A. May & A.A. Lumsdaine (Eds.), *Learning from films*. New Haven: Yale University Press, 1958. Pp. 185-194.

Lumsdaine, A.A. (Ed.) *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. (a)

Lumsdaine, A.A. The analysis of student response as a factor in instruction. In A.A. Lumsdaine (Ed.), *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. Pp. 1-7. (b)

Lumsdaine, A.A. Instruments and media of instruction. In N.L. Gage (Ed.), *Handbook of research on teaching*. Chicago: Rand McNally & Co., 1963. Pp. 583-682.

Lumsdaine, A.A. Educational technology, programed learning, and instructional science. In E.R. Hilgard (Ed.), *Theories of learning and instruction. Sixty-third yearbook of the National Society for the Study of Education*. Chicago: N.S.S.E., 1964. Pp. 371-401.

Lumsdaine, A.A., & Gladstone, A. Overt practice and audio-visual embellishments. In M.A. May & A.A. Lumsdaine (Eds.), *Learning from films*. New Haven, Conn.: Yale University Press, 1958. Pp. 58-71.

Lumsdaine, A.A., & May, M.A. Mass communication and educational media. *Annual Review of Psychology*. 1965, 16, 475-534.

Lumsdaine, A.A., May, M.A., & Hadsell, R.S. Questions spliced into a film for motivation and pupil participation. In M.A. May & A.A. Lumsdaine (Eds.), *Learning from films*. New Haven, Conn.: Yale University Press, 1958. Pp. 72-83.

Maccoby, N. A survey of banking public relations in two New England communities. Boston University Mimeograph, Division of Research, School of Public Relations and Communications, 1955.

Maccoby, N., Michael, D.N., & Levine, S. Further studies of student participation procedures in film instruction: Review and preview covert practice, and motivational interactions. In A.A. Lumsdaine (Ed.), *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. Pp. 295-325.

MacLennan, D.W., & Reid, J.C. *Abstracts of research on instructional television and film: An annotated bibliography*. Vol. I & II. University of Missouri, 1964.

May, M.A., & Lumsdaine, A.A. (Eds.) *Learning from films*. New Haven: Yale University Press, 1958.

May, M.A., & Jenkinson, N.L. (Eds.) The reading of a book based on a film. In M.A. May & A.A. Lumsdaine (Eds.), *Learning from films*. New Haven: Yale University Press, 1958. Pp. 195-203.

McGuire, W.J. Audience participation and audio-visual instruction: Overt-covert responding and rate of presentation. In A.A. Lumsdaine (Ed.), *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. Pp. 417-426.

McNemar, Q. *Psychological statistics*. New York: John Wiley and Sons, Inc., 1962.

Mendelsohn, H. The process of the effect of television in inducing action. In L. Arons & M.A. May (Eds.), *Television and human behavior*. New York: Appleton-Century-Crofts, 1963. Pp. 220-227.

Michael, D.N., & Maccoby, N. Factors influencing verbal learning from films under varying conditions of audience participation. *Journal of Experimental Psychology*, 46, 1953, 411-418.

Michael, D.N., & Maccoby, N. Factors influencing the effects of student participation on verbal learning from films: Motivating versus practice effects, "feedback", and overt versus covert responding. In A.A. Lumsdaine (Ed.), *Student response in programmed instruction*. Washington: National Academy of Sciences, National Research Council, 1961. Pp. 271-293.

Mitchell, J.V. Jr. The use of programmed learning techniques to maximize active participation and feedback in television instruction. In L. Arons & M.A. May (Eds.), *Television and human behavior*. New York: Appleton-Century-Crofts, 1963. Pp. 260-270.

Montgomery, K.C. The role of the exploratory drive in learning. *Journal of Comparative and Physiological Psychology*, 1954, 47, 60-64.

Powers, M.K. Permanence of measured vocational interests of adult males. *Journal of Applied Psychology*, 1956, 40, 69-72.

Roe, A. *The psychology of occupations*. New York: John Wiley & Sons, Inc., 1956.

Roe, A. Personality structure and occupational behavior. In H. Borow (Ed.), *Man in a world at work*. Boston: Houghton Mifflin, 1964. Pp. 196-214.

Samler, J. Occupational exploration in counseling: A proposed reorientation. In H. Borow (Ed.), *Man in a world at work*. Boston: Houghton Mifflin, 1964. Pp. 411-433.

Scheffe, H. *The analysis of variance*. New York: John Wiley & Sons, 1959.

Schroeder, W.W. The effect of reinforcement counseling and model-reinforcement counseling on information-seeking behavior in high-school students. Unpublished doctoral dissertation, Stanford University, 1964.

Stordahl, K.E. Permanence of Strong Vocational Interest Blank scores. *Journal of Applied Psychology*, 1954, 38, 423-427.

Super, D.E. A theory of vocational development. In G.F. Farwell, & H.J. Peters (Eds.), *Guidance readings for counselors*. Chicago: Rand McNally & Co., 1960. Pp. 271-284.

Super D.E., Crites, J.O., Hummel, R.C., Moser, H.P., Overstr P.L., & Warnath, C.F. *Vocational development: A frame for research*. New York: Bureau of Publications, Teach College, Columbia University, 1957.

Super, D.E., Starishevsky, R., Matlin, N., & Jordaan, J.P. *development: Self-concept theory*. New York: College ce Examination Board, 1963.

Super, D.E., Tiedeman, D.V., & Borow, H. Vocational develop a symposium. Some unresolved issues in vocational deve research. *Personnel and Guidance Journal*, 1961, 40, 11tal

Thoresen, C.E. An experimental comparison of counseling te for producing information-seeking behavior. Unpublishe doctoral dissertation, Stanford University, 1964.

Thoresen, C.E., Krumboltz, J.D., & Varenhorst, B.B. The se in model reinforcement counseling. *Procedures of the 7r Annual Convention of the American Psychological Associ* Washington, D.C.: American Psychological Association, Pp. 349-350.

Tiedeman, D.V., & O'Hara, R.P. *Career development: Choice adjustment*. New York: College Entrance Examination B 1963.

Wrenn, C.G. Vocational choice theory - an editorial commen *Journal of Counseling Psychology*, 1958, 6, 94.

Wrenn, C.G. *The counselor in a changing world*. Washington American Personnel and Guidance Association, 1962.

APPENDIX A

PRINTED INSERT FOR BOOKLET IN TREATMENT CONDITION C_2

TO THE HIGH SCHOOL STUDENT:

Your choice of a career is one of the most important decisions you will make in your life. Wise decisions are based on accurate information. Accurate information is gained by exploring all possible information sources and seeking answers to pertinent questions you have thought up.

For each of the possible careers you consider, you will want information to answer some of the following questions:

1. What is the work like?
2. What does it take to be successful in this type of work?
3. How much can I earn if I am successful?
4. What are some of the fringe benefits of this job?
5. What aptitudes (abilities), education, and training would I need?
6. How fast can I hope to get ahead?
7. What kind of future can I expect in the field of which this job is a part?

The purpose of this Workbook is to help you answer these questions with respect to jobs in one field of work - banking. In this Workbook are two separate booklets. The first one is called "Future Unlimited"; it is mainly for high school graduates. The second booklet is called "Banking: A Career for Today and Tomorrow"; it is of more interest to students who hope to receive some college education.

Pick one of the two booklets - the one related to the amount of education you hope to receive. For the rest of the class period, read it closely and try to find answers to each of the above seven questions - and to any others you may wish to add to the list.

If you complete one booklet before the period ends, you may wish to glance through the other one.

APPENDIX B

INSTRUCTIONS AND RESPONSE CATEGORIES OF THE PROJECT TALENT INTEREST INVENTORY

A. BASIC INSTRUCTIONS

This inventory contains items for you to answer about occupations you would like and things you would like to do.

For each item, assume that you would have any necessary training or education that would be required. Disregard salary, social standing, job security, etc. In fact, do not think of anything except how well you would like to do the work or the activity.

Your answer does not mean that you plan to go into an occupation if you say you would like it -- only that it involves the kind of activity you think you would enjoy.

Begin now.

B. INSTRUCTIONS FOR SECTION I - OCCUPATIONS

For each occupation listed below you are to consider whether or not you would like that kind of work. Work quickly. Your first impression is the most valuable. Be sure to answer all of the items.

Mark your answers as follows:

A. I would like this very much.

B. I would like this fairly well.

C. Undecided or don't know much about it.

D. I would dislike this a little.

E. I would dislike this very much.

Use only the capital letters (A, B, C, D or E) to represent your answer to each item.

C. INSTRUCTIONS FOR SECTION II - ACTIVITIES

Indicate as in Section I how much you like or would like each of the following activities.

Once again, be sure to answer all of the items.

(Response categories used in Section I were then listed again.)

SECTION I

OCCUPATIONS ITEMS OF THE PROJECT TALENT INTEREST INVENTORY

Occupations	Your Answer
1. Bookkeeper	______
2. Bank teller	______
3. Surgeon	______
4. Chemist	______
5. Civil Engineer	______
6. Dentist	______
7. Toolmaker	______
8. Automobile mechanic	______
9. Butcher	______
10. Tailor or dressmaker	______
11. Dietitian	______
12. Cab driver	______
13. Longshoreman	______
14. Foreman	______
15. Army officer	______
16. College president	______
17. Insurance agent	______
18. Stock salesman	______
19. Foreign correspondent	______
20. Editor	______
21. Musician	______
22. Aviator	______
23. Rancher	______
24. Airline hostess or steward	______
25. Social worker	______
26. Statistician	______
27. Astronomer	______
28. Research scientist	______
29. Office clerk	______
30. Store clerk	______
31. Plumber	______
32. Electrician	______
33. Fireman	______
34. Dishwasher	______
35. Maid	______
36. Naval officer	______
37. Personnel administrator	______
38. Credit manager	______
39. Lawyer	______
40. Reporter	______
41. Sculptor	______
42. Forester	______
43. Elementary school teacher	______
44. Nurse	______
45. Chemical Engineer	______
46. Doctor	______
47. Pharmacist	______
48. Aeronautical Engineer	______
49. Secretary	______
50. Technician	______
51. Electronics technician	______
52. Bricklayer	______
53. Riveter	______
54. House painter	______
55. Mail carrier	______
56. Building superintendent	______
57. President of a large company	______
58. Author of a novel	______
59. Librarian	______
60. Economist	______
61. Actor or actress	______
62. Professional athlete	______
63. Policeman	______
64. Certified Public Accountant	______
65. Clergyman	______

Section I - continued

Occupations	Your Answer
66. Spaceman	
67. Biologist	
68. Electrical Engineer	
69. Mining Engineer	
70. Typist	
71. Laboratory technician	
72. Repairman	
73. Beautician	
74. Railroad brakeman	
75. Shoemaker	
76. Factory worker	
77. Deliveryman	
78. Truck driver	
79. Building contractor	
80. Marine Corps officer	
81. Real estate agent	
82. Interpreter	
83. Writer	
84. Musical composer	
85. Architect	
86. Decorator	
87. Sports umpire or referee	
88. Guidance counselor	
89. Accountant or auditor	
90. Mechanical Engineer	
91. Mathematician	
92. Switchboard operator	
93. Machinist	
94. Welder	
95. Paper hanger	
96. Carpenter	
97. Type Setter	
98. Draftsman	
99. Housewife	
100. Air Force officer	
101. Office manager	
102. Banker	
103. Salesman	
104. College professor	
105. Poet	
106. Artist	
107. Designer	
108. Farmer	
109. High school teacher	
110. Religious worker	
111. School principal	
112. Psychologist	
113. Member of President's Cabinet	
114. Judge	
115. U.S. Senator	
116. Politician	
117. U.S. Congressman	
118. Mayor	
119. President of the United States	
120. Vice-President of the United States	
121. State Governor	
122. Public administrator	

SECTION II

ACTIVITIES ITEMS OF THE PROJECT TALENT INTEREST INVENTORY

Occupations	Your Answer
123. Take care of members of family	______
124. Make out income tax returns	______
125. Biology	______
126. Physics	______
127. Study muscles & nerves	______
128. Calculus	______
129. Keep records for a store	______
130. Invent new tools	______
131. Fix furniture	______
132. Work on an automobile assembly line	______
133. Wash and iron clothes	______
134. Plan work for other people	______
135. Own your own business	______
136. Reading	______
137. Sociology	______
138. Fishing	______
139. Basketball	______
140. Tennis	______
141. Raise sheep or cattle for market	______
142. Help your parents	______
143. Work arithmetic problems	______
144. Prepare cost estimates	______
145. Fortune telling	______
146. Typewriting	______
147. Make a radio set	______
148. Fix a clock	______
149. Operate a power machine	______
150. Fire a person	______

Occupations	Your Answer
151. Manage a large store	______
152. Save money	______
153. Work for myself	______
154. Write letters	______
155. Practice music all day	______
156. Art galleries	______
157. Football	______
158. Track	______
159. Operate farm machinery	______
160. Operate a calculating machine	______
161. Physiology	______
162. Chemistry	______
163. Play chess	______
164. Solve puzzles	______
165. Do clerical work	______
166. Repair an auto	______
167. Operate a crane or derrick	______
168. Work in a steel mill	______
169. Hire a person	______
170. Give orders to workers in a factory	______
171. Buy stocks	______
172. Sell furniture	______
173. Watch T.V.	______
174. Act in plays	______
175. Trap wild animals	______
176. Foreign language	______
177. Teach children	______
178. Help the poor	______
179. Keep accounts	______
180. Algebra	______

Section II - continued

Occupations	Your Answer
181. Learn about diseases	______
182. Become a millionaire	______
183. Sell merchandise to stores	______
184. Literature	______
185. Write themes	______
186. Go to school	______
187. Symphony concerts	______
188. Hunting	______
189. Swimming	______
190. Feed hogs and cattle	______
191. Sell tickets for a railroad or airline	______
192. Shop work	______
193. Do odd jobs with small tools	______
194. Direct people	______
195. Arrange a strike settlement	______

Occupations	Your Answer
196. Invest money	______
197. Poetry	______
198. Play an instrument	______
199. Studying	______
200. Visit museums	______
201. Exploring	______
202. Military drill	______
203. Baseball	______
204. Gardening	______
205. Campaign for political office	______

APPENDIX C

JOB INTERESTS LIST

DIRECTIONS

There are two parts to this inventory:

A. In the six spaces below, list specific jobs or positions which you find attractive - ones in which you would like to work. Begin now.

1. ______________________________ ________________
2. ______________________________ ________________
3. ______________________________ ________________
4. ______________________________ ________________
5. ______________________________ ________________
6. ______________________________ ________________

B. Are you interested in a career in the field of banking? If so, reread the jobs and positions you have listed and write the word "Banking" beside those at which you would like to work if you were to go into banking.

APPENDIX D

FORMAT AND SCORING SYSTEM FOR BANK ATTITUDE QUESTIONNAIRE

DIRECTIONS

This inventory contains statements concerning attitudes toward banks. Read each statement carefully, then state whether you "Agree Strongly", "Agree Slightly", "Disagree Slightly", or "Disagree Strongly" with that statement.

Respond to each statement by placing a check mark in the column you choose. Begin now.

	Agree Strongly	Agree Slightly	Disagree Slightly	Disagree Strongly
1. Banks are anxious to get and to hold customers.	4	3	2	1
2. Bank employees are paid low wages.	1	2	3	4
3. Banks do not attract really capable employees.	1	2	3	4
4. Banks are open enough hours.	4	3	2	1
5. Banks make too much money.	1	2	3	4
6. Bank employees perform a lot of boring tasks.	1	2	3	4
7. Bankers are as progressive as other kinds of business men.	4	3	2	1
8. Banks have enough tellers at windows during business hours.	4	3	2	1
9. Banks are cold and unsympathetic to deal with.	1	2	3	4
10. Banks just want to do business with the rich people; they have no interest in the average person.	1	2	3	4
11. Banks take a person's character into account when they lend him money.	4	3	2	1

Format and Scoring System for Bank Attitude Questionnaire
Page 2

	Agree Strongly	Agree Slightly	Disagree Slightly	Disagree Strongly
12. Bank employees are mostly older people who have been in banking for years.	1	2	3	4
13. Banking is one field of business which is not old-fashioned in the techniques it uses.	4	3	2	1
14. Bank tellers and officials certainly display a lot of friendliness in serving customers.	4	3	2	1
15. It is not too difficult to obtain a bank loan.	4	3	2	1
16. You have to know the right people in order to get really good service at a bank.	1	2	3	4
17. Banks have improved their physical layout and appearance during recent years.	4	3	2	1
18. Banks do not pay enough interest on savings.	1	2	3	4
19. Banks are not active, like they should be, in community affairs and community development.	1	2	3	4
20. Bankers do not have shorter work days than people in other jobs.	4	3	2	1

APPENDIX E

VOCATIONAL EXPLORATORY BEHAVIOR INVENTORY

DIRECTIONS FOR THE STUDENT

This inventory asks you questions about what you have done during this past month. Through it, we hope to determine what high school students do when they explore different occupations or vocations.

Read each question slowly and then carefully think about your answer. If you need help in understanding or answering any question, hold up your hand and one of the interviewers will come to assist you.

The more care and interest you show in answering these questions, the more you will help us in this final stage of the Stanford University Study of Vocational Tests and Materials.

IMPORTANT NOTE:

All of the questions will concern your activities during this past month. When you are asked what you have done during this month, we mean since April 26th. On that day, you studied some of the vocational materials - films and booklets - which we presented to you. If you wish to check on a specific date during this month, use the following calendar.

APRIL

S	M	T	W	T	F	S
		26	27	28	29	30

MAY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

SECTION A

HAVE YOU TALKED WITH ANY OF THE FOLLOWING PEOPLE SINCE TUESDAY, APRIL 26?

		YES	NO
1. Persons now working at the types of occupations you are considering?		___	___
If you answered "Yes", with how many persons did you talk?	▱		
2. Persons who have worked in the past at the types of occupations you are considering?		___	___
If you answered "Yes", with how many persons did you talk?	▱		
3. Persons who know about the types of occupations you are considering (persons other than those mentioned above), even though they have never worked at these occupations?		___	___
If you answered "Yes", with how many persons did you talk?	▱		
4. Persons attending or who have attended schools or colleges you are interested in attending in order to receive the training and education you need for the types of occupations you are considering?		___	___
If you answered "Yes", with how many persons did you talk?	▱		
5. Persons who know about these schools or colleges, even though they did not attend them?		___	___
If you answered "Yes", with how many persons did you talk?	▱		
6. If you have not mentioned them already, during the month have you talked with high school counselors, teacher advisers, business teachers or other school persons about the types of occupations you are considering?		___	___
If you answered "Yes", with how many persons did you talk?	▱		

Section A - continued

	YES	NO
7. If you have not mentioned them already, during the month have you talked with parents, family members and relatives, close friends or neighbors about the types of occupations you are considering?	____	____
If you answered "Yes", with how many persons did you talk? ☐		
8. Are there any other persons to whom you have talked during this time about the types of occupations you are considering?	____	____
If you answered "Yes", with how many other persons did you talk? ☐		

Now, add the numbers you have written in the boxes. In other words, what is the total number of people to whom you have spoken?

Then, if your total is more than zero, ask one of the interviewers for one copy of "Form A" for each person you mentioned. Complete one copy of "Form A" for each person. When you finish all copies of "Form A", go on to the next page.

If your total is zero, go on to the next page now.

SECTION B

HAVE YOU DONE ANY OF THE FOLLOWING SINCE TUESDAY, APRIL 26?

	YES	NO
9. Have you written any place for information (pamphlet, bulletin, catalog) on occupations or on schools or colleges where you could get training and education for these occupations? If you answered "Yes", how many letters did you write? ☐	____	____
10. Have you looked at or read any books, magazines, bulletin board posters, or pamphlets about the types of occupations you are considering? If you answered "Yes", how many different things did you look at or read? ☐	____	____
11. Have you looked at or read similar things about types of occupations other than ones you are considering? If you answered "Yes", how many different things did you look at or read? ☐	____	____
12. Have you bought, borrowed or checked out of the library any reading material about the types of occupations or the schools and colleges you are considering, but you have not read this material yet? If you answered "Yes", how many things did you obtain? ☐	____	____
13. Have you watched attentively any T.V. programs, fair exhibits, or movies, or heard any radio programs since Tuesday, April 26, about the occupations or schools and colleges that interest you? If you answered "Yes", how many things did you listen to or see? ☐	____	____

Once again, add the numbers you have written in the boxes. What is the total number of things you have done under Section B?

Then, if your total is more than zero, ask one of the interviewers for one copy of "Form B" for each thing you mentioned. Complete one copy of "Form B" for each separate thing you did. When you finish, go on to the next page.

If your total is zero, go on to the next page now.

SECTION C

HAVE YOU VISITED OR MADE PLANS TO VISIT ANY OF THE FOLLOWING SINCE TUESDAY, APRIL 26?

	YES	NO
14. Have you made on-the-job visits to see what the types of occupations you are considering are like?	____	____
If you answered "Yes", how many places did you visit? ▱		
15. Have you made definite plans to make on-the-job visits to see what the types of occupations you are considering are like, but have not yet made these visits?	____	____
If you answered "Yes", how many places did you make definite plans to visit? ▱		
16. Have you visited any of the schools or colleges where you could get training and education for these occupations that you are considering?	____	____
If you answered "Yes", how many schools or colleges did you visit? ▱		
17. Have you made definite plans to visit any schools or colleges where you could get training and education for these occupations that you are considering?	____	____
If you answered "Yes", how many places did you make definite plans to visit? ▱		

Once again, add the numbers you have written in the boxes. What is the total number of visits you have made or planned under Section C?

Then, if your total is more than zero, ask one of the interviewers for one copy of "Form C" for each visit you have mentioned. Complete one copy of "Form C" for each separate visit. When you finish, go on to the next page.

If your total is zero, go on to the next page now.

SECTION D

OTHER IMPORTANT INFORMATION

YES NO

18. Since Tuesday, April 26, have you looked into or made definite plans to look into getting a summer or part-time job that is connected with the types of occupations you are considering? ____ ____

    If you answered "Yes", how many jobs have you looked into or made definite plans to look into? ☐

19. Since Tuesday, April 26, have you looked into or made definite plans to look into getting a summer or part-time job to make money for future training or education expenses? ____ ____

    If you answered "Yes", how many jobs have you looked into or made definite plans to look into? ☐

20. Since Tuesday, April 26, have you taken or made definite plans to take any tests (other than regular classroom tests) in order to find out more about your interests, abilities or achievements? ____ ____

    If you answered "Yes", how many tests have you taken or made definite plans to take? ☐

21. Since Tuesday, April 26, have you had a change in your occupational interests that has led you to consider probably changing your course of study in high school? ____ ____

    If you answered "Yes", how many times has this occurred during this last month? ☐

22. What does your father (or guardian) do at work? ________________

    Does your mother work? _____ If so, what does she do? ____________

Once again, add the numbers you have written in the boxes. What is the total number of things you have done or planned to do under Section D?

Then, if your total is more than zero, ask one of the interviewers for one copy of "Form D" for each separate thing you mentioned. Complete one copy of "Form D" for each separate thing.

PLEASE PRINT YOUR NAME ____________

FORM A

WITH WHOM HAVE YOU TALKED?

(Section A: Questions 1-8)

1. For which question are you using this form? _____
2. What is the name of the person with whom you talked?

____

3. What is his address or how can this person be reached?

____

4. What did you talk about?
   Careers in Banking? _____ Other Occupations? _____
   Schools? _____ Other Topics? _____

   ____
   Please specify.

5. About what types of occupations did you talk with this person?

____

6. How many times during this past month did you talk with this person about this topic? _____ Did you talk by telephone? _____ or in person? _____ About how many minutes did you talk with this person about this topic?
   Under 15? _____ 15-60? _____ Over 1 hour? _____
7. What was the date when you talked with this person? ____________
8. Is this person on the high school staff? _____ A relative? _____

   If other, specify ____________

9. What was your main purpose in talking with this person?

____

10. Did you decide to talk with this person _____ or was it required for a class or a group? _____
11. What do you believe is the most important fact you learned from the conversation?

____

PLEASE PRINT NAME ______________________

FORM B

WHAT HAVE YOU WRITTEN FOR, LOOKED AT, READ, OR OBTAINED?

(Section B: Questions 9-13)

1. For which question are you using this form? _____

2. What was the name or title of the material?

____

3. Who was the author of the material (who wrote it)?

____

4. From where did you receive the material?

Checked out of the library	_____
Obtained as permanent possession	_____
Borrowed from someone	_____
Sent for by mail	_____

5. From whom did you get the material?

Name: ______________________________________

Address: ____________________________________

6. When did you get the material? Date: ____________________

7. What was your purpose in using the material? What was the material about? ______________________________

____

8. What was the most important fact you learned from the material?

____

____

PLEASE PRINT NAME ______________________

FORM C

VISITS MADE OR PLANNED

(Section C: Questions 14-17)

1. For which question are you using this form? ____

2. Was your visit definitely made ____ or is it planned for later? ____

3. Did you decide to make (or plan to make) this visit ____ or was it required for a class or group? ____

4. Is this visit related to schools ____ or to occupations? ____

5. If your visit is related to occupations, what occupation was involved? ______________________

6. What is the name of the person or the place you visited or plan to visit?

   Person's name: ______________________

   Person's position: ______________________

   Place's name: ______________________

   Address of person or place: ______________________

   ____

7. What was the date of your visit or when did you make definite plans for this visit? ______________________

8. How much time did you spend (or will you spend) with this person or at this place?

   15 minutes ____ 30 minutes ____ 45 minutes ____
   1 hour ____ 2 hours ____ 3 hours ____
   over 3 hrs. ____

9. What was (or will be) the purpose of your visit?

   ____

10. What is the most important fact you learned (or hope to learn) from the visit?

   ____

PLEASE PRINT NAME ______________________

FORM D

OTHER IMPORTANT INFORMATION

(Section D: Questions 18-21)

A. If you are using this form for Questions 18 and/or 19, answer the following questions. If you are using it for other questions, go on to the next page.

1. Did you get the summer or part-time job? _____ or do you have definite plans to obtain one? _____ or did you look and have not been successful so far? _____

2. Will you be paid for your work? _____ or are you volunteering? _____

3. Are you interested in the job because it is connected with the types of occupations you are considering? _____ or is it to make money for your future training or education expenses? _____ or both? _____

4. What will you be doing on the job?

____

5. Who did you contact for the job or do you hope to contact?

Name: ____

Address: ____
(or how they can be reached)

6. When did you first talk to this person about the job or make definite plans to talk to this person?

Date: ____

7. What is (or will be) the place at which you have (or hope to have) the job?

Name: ____

Address: ____

8. How, if at all, is the job connected with your occupational interests?

____

Form D - continued

B. If you are using this form for Question 20, answer the following questions:

1. What tests did you take or make definite plans to take?

2. When did you take them or make definite plans to take them?

   Date:

3. With whom did you make the arrangements for these tests?

   Person: Position:

   Address:

4. What is the purpose of taking these tests?

5. Did you take them (or do you hope to take them) in order to help you make decisions about certain occupations? If so, which ones?

C. If you are using this form for Question 21, answer the following questions:

1. What was the change in your occupational interests that you have had during this time?

2. When did this occur? Date:

3. With whom have you talked concerning the possibility of changing your course of study?

   Person: Position:

   Address:

4. What has caused this change in your occupational interests?

APPENDIX F-1

INSTRUCTIONS FOR TESTING SESSION #1

TO TEST ADMINISTRATORS:

Where quotation marks are used below, please read these statements to the students. Try not to make any other statements to them. In this way, we should be able to standardize the testing conditions across both schools and over all students involved. Thank you, in advance, for your cooperation in this project.

Step #1: Seat all students as quickly as possible since about 45 minutes will be necessary for students to adequately complete the three inventories used.

Step #2: Distribute all three inventories (Project TALENT Interest Inventory, Job Interests List, and Bank Attitude Questionnaire). Students should not open the booklets until instructed to do so. They could write in the necessary information (name, sex and age) on the cover page of each inventory while they are waiting.

Step #3: Introductory comments to be read to the students:

"Over the past few years, many attempts have been made at helping people, particularly high school students, to make wiser vocational choices based on accurate information.

Many of the vocational tests and materials which have been developed do not seem to be very effective. Therefore, the School of Education at Stanford University is trying to study old and new ideas on tests and materials, as well as to observe the students who will use them.

In a number of schools in the Bay area, Stanford University is surveying different groups of sophomores. Today's session is the first one in a series with sophomores in this school. We shall begin by studying the three tests or inventories which you have received.

Answer all items on these three inventories. Make accurate responses because this will help this study to be more effective in helping you and other students in the future. You will have the rest of the period in which to complete these inventories. Work steadily.

Begin with the six page test called "The Project TALENT Interest Inventory", then complete the "Job Interests List". Do the "Bank Attitude Questionnaire" last. Start now."

Step #4: While the students respond, check to make sure that each student signs his or her name, age, and sex on the cover of each test.

Step #5: Just before the end of the period, read this statement:

"Thank you for your cooperation in the first part of this study. It will continue in the near future. Please make sure that your name is on the cover of each inventory you completed."

Step #6: Collect all inventories. It would be helpful if they were collected in three separate piles - one for each type of inventory. Thanks.

APPENDIX F-2

INSTRUCTIONS FOR TESTING SESSION #2

TO TEST ADMINISTRATORS:

Where quotation marks are used below, please read these statements to the students. Try not to make any other statements to them. In this way, we should be able to standardize the testing conditions across both schools and over all students involved. Thank you, in advance, for your cooperation in this project.

Step #1: Seat all students as quickly as possible since about 45 minutes will be necessary for students to adequately complete the three inventories used.

Step #2: Distribute all three inventories (Project TALENT Interest Inventory, Job Interests List, and Bank Attitude Questionnaire). Students should not open the booklets until instructed to do so. They could write in the necessary information (name, sex and age) on the cover page of each inventory while they are waiting.

Step #3: Introductory comments to be read to the students:

"The purpose of this third session of the Stanford University School of Education's study of vocational tests and materials is to have sophomores take three inventories for a second time.

In other words, we want you to respond to the same three inventories you took two weeks ago. This will give us an opportunity to study the amount of stability or change in students' vocational ideas over a two week period.

Answer all the items as carefully as you can - do not worry about how you may have responded two weeks ago. React to the item statements in terms of how you think and feel today. Be as honest as possible with yourself.

Answer all the items. You have the rest of this period. Begin with the six page test called "The Project TALENT Interest Inventory", then complete the "Job Interests List". Do the "Bank Attitude Questionnaire" last. Start now."

Step #4: While the students respond, check to make sure that each student signs his or her name, age and sex on the cover of each test.

Step #5: Just before the end of the period, read this statement:

"Once again, thank you for your cooperation. Please make sure that your name is on the cover of each inventory you completed."

Step #6: Collect all inventories. It would be helpful if they were collected in three separate piles - one for each type of inventory. Thanks.

APPENDIX G

INSTRUCTIONS FOR VOCATIONAL MATERIALS SESSION

TO RESEARCH ASSISTANTS:

Where quotation marks are used below, please read these statements to the students. Try not to make any other statements to them. In this way, we should be able to standardize the testing conditions across both schools and over all students involved.

Step #1: As students enter the room give them a "Student Reaction Sheet" and have them sign their names on it while they are waiting in their seats. If you have other written materials (excluding "Suggestions to the Student"), distribute them at this time. Students should not open any booklets (if they received them) until instructed to do so.

Step #2: Introductory comments to be read to the students:

"You will remember that last week you participated in the first session of this study of vocational tests and materials. Perhaps you will recall that sophomores in several high schools in the Bay area are involved in this Stanford University, School of Education project.

Today we are interested in your reactions to some educational and vocational materials. Study them closely. At the end of this class period, quickly but thoughtfully complete the "Student Reaction Sheet" which you have just been given.

You will then hand this sheet in and we shall give each of you a handout called "Suggestions to the Student" which could be helpful to you. Read it carefully."

Step #3: If you are working with filmed materials, turn the lights off and run the film for the rest of the period.

If you are working with written materials (no films at all), tell the students to open their booklets and work through them for the rest of the period. Stop them 5 minutes before the end of the period and collect all the booklets.

Step #4: Concluding comments to be read to the students (same for all materials):

"Thank you for your attentive participation. Would you now please quickly complete your "Student Reaction Sheet". Make sure your name is on it."

Give them one minute to react, then say:

"I shall now collect these reaction sheets and give you a copy of "Suggestions to the Student". We believe that any choice you make concerning a vocation should be a wise, informed choice. To do this you will need accurate information collected while you explore all alternative sources of help.

Here are some suggestions which will demonstrate how a person could obtain more information about one specific career - banking. You could explore other vocational fields in similar ways."

Step #5: Collect "Student Reaction Sheets". Hand out copies of "Suggestions to the Student" and dismiss the group when the buzzer sounds to indicate period's end.

APPENDIX H

STUDENT REACTION SHEET

YOUR NAME ______________________

Quickly respond to the following questions concerning the educational or vocational materials which have just been presented to you.

Circle the letter of the statement which best represents your reaction. Be honest - your reactions are confidential; they will be used for research purposes only.

1. To what degree were you interested in the materials?

   A. I was very interested.

   B. I was fairly interested.

   C. I was neither interested nor bored.

   D. I was not very interested.

   E. I was not interested at all.

2. What did you think of the materials presented to you?

   A. Excellent - some of the best I have seen.

   B. Good - better than most I have seen.

   C. Fair - average - like most I have seen.

   D. Poor - not as good as most I have seen.

   E. Horrible - some of the worst I have seen.

3. To what degree have these materials stimulated you to explore for more information about vocations?

   A. I am now stimulated to explore a lot.

   B. I am now stimulated to explore a little.

   C. Undecided - do not know what I shall do.

   D. I am not stimulated to explore much.

   E. I am not stimulated to explore at all.

APPENDIX I

CALIFORNIA BANKERS ASSOCIATION - BANKING CAREER KIT

SUGGESTIONS TO THE STUDENT

A. Check to see how well you did in answering the questions. Here are the correct answers for each section:

Section I

A. No - would not ask each teller this.
B. Yes - would give each teller a tally sheet.
C. No - each type of transaction takes a different time.
D. No - would not have enough information this way.
E. Yes - would need observations during these times.
F. Yes - this knowledge would influence observations.

Section II

A. No - signatures do not match.
B. Yes - the date is all right.
C. Yes - the addresses match.
D. No - signatures do not match.
E. No - would not cash the check.
F. No - would not use this technical term.

Section III

A. No - it does not indicate this.
B. Yes - he may need more money then.
C. Yes - must receive their approval.
D_1. No - not leave school.
D_2. No - not receive a large increase.
D_3. Yes - part-time job plus small increase.

Section IV

A. Yes - seems to have necessary training.
B. No - not organized or using those skills.
C. No - not get opinions of her fellow employees.
D. Yes - try to observe her.
E. No - not change her to another job immediately.
F. Yes - spend time with her.

Section V

A. Yes - stable employment record.
B. Yes - paying a fair price for the car.
C. Yes - record of paying bills on time.
D. No - debts do not exceed that amount.
E. Yes - would lend him $450.
F. Yes - would lend him more than $450.

There are a total of 30 answers. How many did you get correct? _____

If you got 25 or more correct, you seem to understand well some of the factors in banking decisions. Perhaps you would be interested in looking further into the possibilities of a banking career. Study the list of suggestions which follow.

SUGGESTIONS TO THE STUDENT (continued)*

*B. If you wish to investigate the area of banking in more detail so that you can make more accurate vocational decisions, read the following list of suggestions and attempt to follow out as many of them as you can.

1. Arrange an interview with your school counselor, teacher advisor, or business education teacher. Either they will discuss vocational decisions with you and give you more information on banking careers, or they will refer you to other reliable sources of assistance.

2. Find out if your school counselor can arrange contacts for groups of students with some of the local banks. Often banks are able to supply speakers on banking careers. Some banks may even be able to arrange group tours of bank facilities.

3. Check your school library, your counselor's vocational information file and the local library for written materials on the history of banking, its methods and procedures, and its scope of job and career opportunities.

4. With your family, discuss your possibilities of a career in banking. Also helpful could be similar discussions with any friends or acquaintances who happen to be working in banks.

*5. Attached to the back of this page is a stamped, self-addressed post card. If you wish further information about possible career choices for you, detach the card, fill it out, and mail it as soon as possible.

6. If you still need additional information after following these suggestions, you may write to:

Banking Career Information,
California Bankers Association,
1120 Russ Building,
San Francisco, California. 94104

*NOTE: The word "continued" and the letter "B" were deleted on copies given to subjects in the control treatments and in treatment E_3.
Format of the post card is shown on the following page.

FORMAT OF POST CARD

Please send me the following information. (CHECK ONE ITEM ONLY)

___ 1. List of additional suggestions for students wishing to investigate banking careers in more detail.

___ 2. Information about this job in the area of banking. ____________________

___ 3. If it is available, information about a job in an area *other than* banking.
Name the job: ____________________

____

____

My Name: ____________________

Address: ____________________

APPENDIX J

SCRIPT FOR THE CALIFORNIA BANKERS ASSOCIATION VOCATIONAL FILM

VERSION: ACTIVE-OVERT PARTICIPATION FILM

"A PROGRAM FOR THE FUTURE: CAREERS IN BANKING"

SCENE 1 - TITLE SEQUENCE - INT. COUNSELOR'S OFFICE: CLOSE UP OF KEN'S HANDS PASSING OVER PAGES OF OPENED BOOKLETS - TO COUNSELOR

We can assume that this random collection of books and booklets has been picked up by Ken on his tour of several banks. He is now showing them to Mr. Johnson, his counselor. As the change takes place POP ON TITLE in two places.

Across top left segment os screen: "A Program for the Future"

Across bottom right segment of the screen: "Careers in Banking"

MUSIC: SPIRITED THEME TO COVER. AS WE HIT FINAL BOOK, FADE OUT MUSIC.

CUT BACK - SCENE 2 - SAME - MEDIUM TWO SHOT OF KEN AND JOHNSON

Counselor holds up one of the open booklets as he turns to camera.

COUNSELOR: Banking, like many other major American businesses, distributes a great deal of material for students who want vocational information in its field...

He puts booklet down and
picks up the Banking Careers Workbook.

...and all of it is definitely helpful. But how about trying something new and different which may be even more helpful? We'd like to take you beyond reading to actual situations; to seeing, hearing and DOING.

SCENE 3 - CLOSE UP OF WORKBOOK

COUNSELOR: Each of you has this workbook which you will use a little later to solve problems which resemble ones encountered by bank employees.

SCENE 4 - BACK TO TWO SHOT (BUT NOW FEATURE KEN)

COUNSELOR: But before we go into more detail, suppose we have Ken, here, fill us in on how this all came to be. Ken is one of our students, and with the help of a number of banking people, he located a series of problems for us. Give us some background, Ken.

KEN: Sure, Mr. Johnson. (TO CAMERA) Well, after Mr. Johnson saw the results of my interest tests, he told me my scores indicated interests similar to those of people in business jobs. After we discussed it for a while, I decided I should look into some of the major branches of business. But which? There are hundreds of them. After some study, Mr. Johnson arranged a series of field trips for me so I could see some of the businesses first-hand. One of them was banking. For instance, I actually went to various banks and talked to the people who work there. They took me around and let me see the way things work. (OPEN TO TWO SHOT) Anyway, one of the things that most impressed me was that I was given the opportunity to see some of the interesting decisions banking people have to make. (TO COUNSELOR) When they asked me if I would like to suggest solutions to some of the easier problems, I jumped at the chance.

COUNSELOR: (TO AUDIENCE) (CLOSE UP) Now we're going to see some of these problem situations and we'd like you to try to come up with reasonable solutions. It'll work like this. You'll have a chance to see simplified versions of a series of actual banking problems which bank employees must solve. In each case, imagine that you are the employee who is faced with the problem. When we get to the point where a solution to the problem is necessary - this will happen. (SCREEN GOES WHITE - QUESTION MARK - THEN WHITE) The projector will be turned off, the lights turned on. You will turn to the appropriate page of the Banking Careers Workbook (CLOSE UP AGAIN OF BANKING CAREERS WORKBOOK) and then you will have a chance to try your hand at banking by marking the answers that seem to be correct. When you've had enough time, the lights will go off, the projector will be started. As you see how the bank employee solved the problem, you can compare your answers mentally with those given in the film. Many different answers are possible; banks may differ in the ways they solve their problems. The answer you'll hear will be the one chosen by the employee of the particular bank filmed. Altogether there are five sets of problems which we will present for your solution. Notice that your Banking Careers Workbook is divided into sections, one section for each problem, all in the order in which the film presents them. We'll be covering a lot of ground and meeting a number of different banking people so we have asked Ken to serve as a guide. He'll give you some background information which will help you make decisions on each problem.

KEN: Well...first a little background on me and banking. Like most of us, I had done some reading about banking -- and I'd been inside quite a few banks.

DISSOLVE - SCENES - INT. LOBBY

Series of quick cuts showing: People at teller's windows; people being interviewed at desks; people filling out slips at floor tables.

KEN: From all I'd seen up to this point, I had the impression that everyone in banks worked out in front with the customers, either taking in money - or handing it out -- either paying interest - or charging it. This, plus checking accounts, seemed to be it. Which meant that all anybody in a bank did was add, subtract, multiply and divide. That was what I told my guide. He laughed and said that ALL bank people had to be accurate and precise in their work. Then he pointed out that there are many jobs in banking that young people do not even know about unless they have looked closely at a modern bank. Applicants for these jobs have a variety of backgrounds of education and experience. Anyway, I'd guess it was to correct my over-simplified idea...

DISSOLVE - SCENES - DATA PROCESSING

...that my guided tour began with data processing. I was surprised at how big a role it plays in modern banking. Some banks have rooms full of computers like this one, and they are used for all kinds of operations. They keep the customers' accounts up to date, help with lending systems, look after some of the bank's other accounting systems, as well as handling many other involved jobs. And they're always developing new uses for computers. Once they have a job they want a computer to handle, they assign a computer programmer to study the job and to come up with a program. He may work on it with other programmers, with systems analysts, and with technical persons who may know more about the computer's capabilities. As I understand it, a program is like a message - it instructs the computer to perform certain operations upon any facts or data which are fed into the computer. Miss Reiser there is a computer programmer. She's one of those who makes up new programs as well as services old programs to make sure they are running through the computer properly.

AUDIO

HARRY: (CALLING) Joan, can I see you for a couple of minutes?

JOAN: Be right with you Harry. (TO OPERATOR) Switch it to B-12 until I get back.

OPERATOR: Okay. (WORKS CONSOLE)

JOAN: We'll rerun the other program then.

OPERATOR: (NODS)

JOAN: (WALKING TO OFFICE) What is it Harry?

HARRY: I just got this one from Mr. Engel. (HANDING HER PAPER) It seems like the assignment you had a couple of weeks ago - staffing problems.

JOAN: (LOOKING AT PAPER) No, this one looks different. My job was to set up a program which was an inventory of all our banks' executives and their characteristics. All the information was easy to collect for that one. The data for this program will take more time to compile.

HARRY: As I get it, what they want is a program that'll guarantee that the right number and type of employees will be on duty during each hour of the day.

JOAN: For each banking office...

HARRY: They notice the problem in the tellers' area most easily. In fact, here it is here -- (PULLING PICTURES OUT OF A FOLDER - LAYS OUT PICTURES) This shot here is taken Monday at 11. This is the same place three hours later. Here it is Wednesday at the same hour. This is Wednesday again, 2 P.M., but it's the end of the month.

JOAN: That's easy enough to follow. They want a program which makes sure that they never have too many customers standing in line nor too many employees standing around with nothing to do. Well, where do we start?

HARRY: Same old place. (MOVES TO BLACKBOARD - WRITES "FACTORS") One factor for sure is (WRITES) "Traffic Changes" -- banks crowded one hour, empty the next.

JOAN: It'll take some digging to uncover all the facts about changes in traffic for different banks. But I'll bet we can work out a series of traffic profiles which will represent the number of customers at various hours on various days in each type of bank.

HARRY: Then there's another factor - different transactions take unequal amounts of the teller's time. It takes longer to look up a customer's account and bring his savings record book up to date than it does to cash a standard check. (WRITES "TRANSACTION TIME DIFFERENCES" ON BLACKBOARD)

JOAN: And some branches get more of one kind of transaction than another.

HARRY: We'll have to find out how much time it takes to carry out various types of transactions.

JOAN: Well, before we can think about working out a program, you will have to go out and study customer traffic in some of our banks. Why don't you start setting up a research system; this would give you a plan about where, when and what you would like to observe in the different banking offices. I'll be back when I finish delivering the program I've got running.

HARRY: Good deal. (STARTS WORKING AT BOARD. SHE LEAVES AND GOES TO COMPUTER.)

?

MUSICAL NOTE AND INSTRUCTIONS "TURN TO PAGE 1 OF YOUR BANKING CAREERS WORKBOOK AND ANSWER THE QUESTIONS ON THE COMPUTER PROGRAMMER"

IN COMPUTER ROOM - JOAN IS READING PRINT OUT - HARRY STANDING BY

JOAN: The initial stages of your program for employee scheduling seem to be working very well.

HARRY: There's a good bit more field testing to do, but I think it'll go.

JOAN: The tellers did a good job on those check lists you made up for them.

HARRY: Yes, we had cooperation up and down the line. In the first bank we visited, we had each teller keep a tally of what she did each half hour. The check list was the best way to get the data about the type and number of transactions performed by the tellers in that bank in each half hour of the day. We certainly found out that various types of transactions take longer to perform than others.

JOAN: Getting the tellers to use those checklists was a good idea, especially when you needed observations for different kinds of days - beginning, middle or end of the week, first or last of the month, winter or summer. Obviously you have to have separate schedules for each of these times. You would have to observe bank traffic during the regular midweek days when the bank is less busy and you certainly would need information regarding traffic at various times during the month when banks are busier. Local paydays would be an example of busier days.

HARRY: Well, it took a while but it's worth it. We should be able to tell all bank managers exactly how many tellers to have on duty any time of the day, any day of the month. This even makes it possible to hire part-time tellers.

JOAN: It's a good job. Here's one point here...(LOSE AUDIO)

KEN: (VO) Watching those big computers at work gave me the feeling that all banking would soon be done by huge machines and just a few people -- but, as the guide put it -- the machine is just a machine. It's the data processing people who do the thinking - and tell it what to do.

DISSOLVE - SCENES - BACK TO COUNSELOR'S OFFICE

KEN: He compared the computer to a piano. What comes out of it depends mostly on the quality and training of the man or woman who plays it.

COUNSELOR: Did he indicate the background needed?

KEN: (TO CAMERA - GRINNING) Arithmetic. No, seriously, Miss Reiser has a college degree - specializing in mathematics, accounting and such. Harry had some junior college training in data processing and then worked his way up through the bank itself.

COUNSELOR: What about the tellers' jobs they were studying? Any impression of their problems?

KEN: (TO COUNSELOR) Yes - another correction. From the tally sheets they had, I felt the teller's day was just a series of mechanical jobs which took a sharp eye and a quick mind. (TO CAMERA) When I told the guide that, he said "Let's go down and see..." (SCENES) I guess everybody knows that a teller is the person you see when you deposit or withdraw money from the bank. One thing, though, that you might not know, is that an important part of a teller's job is public relations. The teller deals directly with customers and it's up to her to be sure they get a good impression of the bank -- you know, friendly and helpful. It takes a lot of skill to meet all kinds of people and do a good job of it.

CUT TO INDIVIDUAL TELLER AND BRING UP SOUND

TELLER: Well, I'm glad you're feeling better, Mrs. Quigley.

QUIGLEY: (OLDER, GARRULOUS) Yes, with Mr. Quigley bedridden all these years, I just can't afford to be sick. Do you know, that man needs to be taken care of morning, noon and night! Why, even when I come down here I have to get someone to stay over. He...

TELLER: (STEPPING IN) Why Mrs. Quigley, why don't you investigate our bank by mail plan? Then you could do all your banking without leaving home.

QUIGLEY: (DEFLATED) Bank by mail?

TELLER: Yes, just step over to Miss Parker there by the door and she'll explain it to you. (RETURNING PASS BOOK AND CLOSING TRANSACTION)

QUIGLEY: (RELUCTANTLY) Thank you.

TELLER: (SMILES A DISMISSAL)

COSTANO: (STEPS UP AND DIFFIDENTLY LAYS DOWN A CHECK) Could you cash this for me?

TELLER: Do you have an account with us?

COSTANO: Huh? Oh (FUMBLING IN POCKET AND PRODUCING A PASSBOOK) yeah -- here.

TELLER: Thank you, Mr. Costano. (TURNING CHECK OVER) Oops, I need your endorsement. (HANDS IT BACK, THEN HE SIGNS IT AND RETURNS IT TO HER) Be sure to sign it just as it appears on the face of the check, please. (HE REACTS WITH A SMALL CHANGE)

COSTANO: Here you are.

TELLER: Thank you. (GIVES HIM MONEY, FINISHES TRANSACTION)

COSTANO: (STARTS TO LEAVE - COMES BACK TO OBVIOUS IRRITATION OF MAN BEHIND) Where can I get a bus to the County Hospital?

TELLER: Just outside the door - the number 6 bus.

COSTANO: Thanks. (LEAVES)

MURPHY: (STEPS UP AFTER CASTING DISGUSTED LOOK AFTER COSTANO - LAYS DOWN CHECK WHILE SILENT AND GLOWERING)

TELLER: Good afternoon.

MURPHY: (GRUNTS)

TELLER: I'm sorry, I don't know this bank. Do you have an account with us, Mr. Murphy?

MURPHY: Will you please just cash the check.

TELLER: May I see your identification please?

MURPHY: Well, for Pete's sake....(ANGRILY YANKS OUT WALLET AND PRESENTS CREDIT CARD)

TELLER: Do you have anything other than this credit card, sir?

MURPHY: That card gets me almost anything I want to buy -- you mean it's not enough for you?

TELLER: (RETURNS CHECK AND CARD) I'm sorry, Mr. Murphy, you'll have to have this approved by a platform officer.

MURPHY: Who? What? (TURNS INEFFECTUALLY) You mean after standing here for 20 minutes, you won't cash it? I won't see any "Platform Officer". This is one fine way to run a bank! Are you going to cash my check?

?

MUSICAL NOTE AND INSTRUCTIONS "NOW TURN TO PAGES 2 AND 3 OF YOUR BANKING CAREERS WORKBOOK AND ANSWER THE QUESTIONS ON THE TELLER"

MURPHY: What, you mean after standing here for 20 minutes, you won't cash it? I won't see any "Platform Officer". This is one fine way to run a bank! Are you going to cash my check?

TELLER: Mr. Murphy, I'm sorry for not explaining the problem. You see, on the face of the check it is made out to you and your wife but, on the other side, it has been endorsed or signed only by you. Then, you can see that the handwriting on your credit card is not the same as that on the check endorsement. Perhaps you have a signed driver's license - it is good for identification because it also has your picture on it. (PAUSE) I am sorry for using a technical term like "platform officer". What I really meant was one of the officers over in that area of the bank. (POINTS TO PLATFORM AREA) I can't cash your check until one of those officers approves it, but if you'll wait just a moment, I'll have the guard introduce you to Mr. Bryan, one of our officers. I'm sure he'll take care of you. (SHE BECKONS AND INSTRUCTS GUARD. AS GUARD LEADS MURPHY AWAY, KEN COMMENTS)

KEN: (OVER ABOVE) Like I said, it isn't easy to do a good job with all kinds of people. I was told the teller's job is often the beginning of a banking career for some people. (BACK TO OFFICE) They even have planned training programs where they have you work in each different part of the bank for a while.

COUNSELOR: Yes, most major business organizations have well-planned training programs and banking has one of the most extensive. Programs for all bank positions are available for qualified men and women.

KEN: That's another of the things that surprised me. I've always thought that banking was a man's world, but I found out that women held important positions - some were even Vice-Presidents. In this next situation, there's a woman who's a trust officer - Mrs. Edwards. (DISSOLVE TO BANK) Her job is to take care of money for other people. Suppose a husband dies and the wife is not used to investing or handling money. The will may have instructed a bank to assign somebody like Mrs. Edwards to take care of all the finances - even pay the bills and give advice. The widow doesn't have to worry about it at all. Or when children are left money in somebody's will, it's often left "in trust" (I think that's what they call it). This way the money is watched over by a person who carries out all the legal requirements of the will or trust agreement. Most of the time, though, the trust officers really get to know the people they work with. Many women are good at this job. It takes plenty of patience and a real liking for people -- you have to want to help them. A lot of college graduates are interested in trust officer positions. Some of them have legal training.

DURING THE ABOVE WE SEE A YOUNG WOMAN ENTER THE TRUST OFFICE - GREET THE RECEPTIONIST - RECOGNIZE AND SHAKE HANDS WITH A YOUNG MAN SHE OBVIOUSLY KNOWS WHO HAD BEEN WAITING. SHE GUIDES HIM THROUGH THE TRUST OFFICE PAST HER DESK INTO A CONFERENCE ROOM. SHE RETURNS TO HER DESK AND PICKS UP A FILE. SHE THEN JOINS HIM IN THE ROOM AS THE AUDIO COMES UP.

EDWARDS: Well, Don, you're looking very fit. Have you lost some weight?

DON: Yes, but I don't know if it's from exercise or worry.

EDWARDS: My, what's the problem?

DON: (AFTER A SWALLOW - PLUNGING IN) Alice is going to have a baby.

EDWARDS: Don, congratulations. When is it due?

DON: Not for another six months. But you can see what this is going to do to our finances. I still have two years of undergraduate study to go at the university, and as it is we're just making it. The tuition went up again last year, you know.

EDWARDS: (CONSULTING FILE) Let's see, your grandfather left you and your sisters $25,000 each in trust, with the provision that you be paid $4,000 per year for four years while attending an accredited college. You are to receive the balance - $9,000 - when you get your degree.

DON: That sounded fine before I married Alice and we did manage pretty well the first year - but I know the baby's going to make a difference. (AGGRESSIVE - SLIGHTLY) It's just that the rest of that money's there and now's the time I need it.

EDWARDS: Well, the will did include a special clause which lets the bank make extra allowances in emergencies. Your grandfather was wise enough, Don, to realize that emergencies might occur and so the bank can pay out extra money if it seems necessary.

DON: (EAGERLY) That's a relief. When can I get the rest of the money?

EDWARDS: Just a moment, Don. I said the bank can give you the money if it seems necessary. I think we had better look a little closer at your situation. You have two more years to go at University - then what do you plan to do?

DON: Law school. (A LITTLE CURT)

EDWARDS: What does that mean in terms of time?

DON: (THE LIGHT DAWNING A LITTLE) Well, it could mean another three years, but the baby will be older then.

EDWARDS: Yes, and more expensive.

DON: Well, Alice could get a part-time job to help out.

EDWARDS: Maybe that's the answer. Have you discussed the possibility of Alice working next year?

DON: Yes, some. We hoped she wouldn't have to work. I think she should just take care of the baby for the first few years.

EDWARDS: Don, this request is one that I'll have to talk over with the Trust Committee. I think it's important to get the reactions of the senior trust officers who are members of the Committee and, in any case, the Trust Committee must agree to any changes made in the trust agreement.

DON: Okay, Mrs. Edwards. You've been very fair in the past. I know you'll do what you think is best for me.

EDWARDS: Of course, Don. Can you come in tomorrow about 3? I'll have an answer for you then.

?

MUSICAL NOTE AND INSTRUCTIONS "TURN TO PAGE 4 OF YOUR BANKING CAREERS WORKBOOK AND ANSWER THE QUESTIONS ON THE TRUST OFFICER"

EDWARDS: Don, the Trust Committee and I reviewed a number of possible answers to your request. When you mentioned that you hoped to go to Law School, I knew that you may even need more money then than you do now. I believe I told you yesterday that I would have to discuss your problem with the Trust Committee since any change in your trust agreement must be approved by them. But first I personally would like to know if you had a chance to think things over after our last conversation.

DON: Well, yes. (DECISIVE) We've decided we're going to need that money much more in the future than we do right now. In fact, there's no reason why I couldn't take a part-time job for a little while to help make ends meet.

EDWARDS: That's fine, Don. I agree with your decision. The job wouldn't have to be for too many hours a week, because I know the Trust Committee will agree to a small increase in your allowance.

DON: Well, things certainly look brighter than they did yesterday.

EDWARDS: I'll have to get an official okay from the committee, as they legally represent the bank which was specified in your grandfather's will, but it's only a formality in this case.

DON: Thanks a lot, Mrs. Edwards. (THEY CONTINUE THEIR CONVERSATION. WE WATCH THEM WALK ACROSS THE FLOOR AND HE TAKES LEAVE AT THE DOOR.)

KEN: One thing I learned about banking is that it isn't all handling money. You have to know people and have to be able to work with them. I suppose most businesses are like that.

COUNSELOR: I think that's true, Ken. These days many large organizations will employ specialists in employee relations as well as public relations. And, of course, people in supervisory capacities must have the ability to work with the people under them.

KEN: It isn't easy to be in charge.

COUNSELOR: No, it isn't.

KEN: One man I talked to demonstrated that to me. He's what they call an operations officer. (DISSOLVE TO BANK - CAMERA FOLLOWS OPERATIONS OFFICER) It's his job to see that everything on the bank floor runs smoothly -- that the tellers and clerks and everybody is doing his job. It's up to him to be sure that everything really clicks. He has to know a lot about most parts of the bank's business. Mr. Ostler, here, went through the bank's training program and now he's a regular operations officer with many responsibilities. For instance, the different checks have to be accounted for and checked out on the computer by a certain time. Well, that's part of his job - making sure these deadlines are met. Sometimes complaints come in from people who don't like the way their accounts are being handled. He deals with these too. Or when problems come up that the clerks can't handle, they bring them to Mr. Ostler to solve. (AUDIO COMES UP)

FRANKLIN: Mr. Ostler, could you come here a minute?

OSTLER: What is it, Miss Franklin? (CAMERA SHOWS HER DISORGANIZED DESK)

FRANKLIN: It's this Maxim account. I simply can't figure out the kinds of deposits she sends in.

OSTLER: I'm sure you remember going over a similar deposit problem during the training program.

FRANKLIN: Oh, that's right. I don't know what I could have been thinking about...of course, that was almost two years ago.

OSTLER: I seem to remember that Mrs. Maxim's account has had deposits of this sort before. Have you noticed?

FRANKLIN: I guess so...it's just that this one looked different. Maybe I've been working too hard.

OSTLER: Well, I have noticed that your supervisor has given you permission for quite a bit of overtime lately. In fact, I had been planning to speak to you about it.

FRANKLIN: The work has to be done.

OSTLER: I realize that, but when overtime occurs this regularly we wonder if we have scheduled our employees properly, or if we are overloading some of them.

FRANKLIN: (DEFENSIVELY) I'd prefer not to have to stay late. I'm so tired the next morning that...

OSTLER: That's just the point. Our schedules are arranged so that no one will be asked to do more than she should. As you know, our whole customer service operation was set up by computer. Your overtime record makes me wonder if the computer did the job properly.

FRANKLIN: Well, really there's a simple explanation. I had a lot of work to make up...

OSTLER: You mean after your illness?

FRANKLIN: Yes, I missed three days in a row with that terrible cold, and when I got back my work was stacked up.

OSTLER: (GENTLY) Wasn't that four weeks ago?

FRANKLIN: (NON-RESPONSIVE) It's just been one thing after another since then. It seems that once you get behind you never catch up.

OSTLER: Is there any way that I can help? There seems to be an important problem here; one that I would like to help remedy. Maybe if we...

FRANKLIN: (THREATENED) No, no -- I'm sure I have everything under control now.

OSTLER WALKS AWAY - PENSIVE MOOD

?

MUSICAL NOTE AND INSTRUCTIONS "TURN TO PAGE 5 OF YOUR BANKING CAREERS WORKBOOK AND ANSWER THE QUESTIONS ON THE OPERATIONS OFFICER"

OSTLER: (AT DESK - CLOTHES CHANGE) There, Miss Franklin, you see how it all comes together when you make the entry first?

FRANKLIN: It seems so much easier that way.

OSTLER: It's one of the tricks I picked up on the training program. There are a number of small changes like this one that I think we might try.

FRANKLIN: I never realized...

OSTLER: When I watched you whenever I had an opportunity last week, trying to get my own evidence regarding what was causing your difficulty, it was clear that you were really applying yourself. Also, I remembered that you had received training for this job and that you were certainly not inexperienced in it because you have had the job for two years. But still...

FRANKLIN: I...

OSTLER: The work wasn't getting done on schedule. Just a matter of organization. Disorganized work often results when a person does not make use of the skill he or she has been taught.

FRANKLIN: (RELIEVED) It did seem as though I got a little disorganized at times.

OSTLER: Here, let me show you one other thing I noticed; then I would like you to try it to see if the work goes more smoothly.

FADE OUT - AUDIO - THEY CONTINUE WORKING TOGETHER AT DESK

KEN: I found out that it isn't just a matter of knowing something's wrong -- it's knowing what to do about it. (DISSOLVE TO OFFICE) The operations officer is in a good spot to learn just how a bank functions.

COUNSELOR: It would seem that it's an ideal position from which to draw top executives.

KEN: It is. Actually, banking draws a very high proportion of its officers from inside the bank itself - from all levels. It isn't so much where you start, but how good a job you do. If you ARE career-minded, the banks have such intensive training at all levels that the way up is right there for anybody who can do good work.

COUNSELOR: Any examples?

KEN: Yes - I saw a very good example in a part of the bank which everybody visits at one time or another... (DISSOLVE - SCENES - WIDE SHOT OF ROOM)

Hanson comes out of side office to his
desk on floor. Receptionist brings
Grover to Hanson's desk and the two
men shake hands and sit down.

KEN: (VO) ...the installment lending department. This is where you go to borrow money for say, a car, home improvements, or such. Big loans are handled in another department. Most of the loans here are for $2,000 or less - usually to be paid back by the month and within two years. The man who decides whether or not to lend the money is called the lending officer... (SCENES - TWO SHOT OF GROVER AND HANSON, WITH HANSON FEATURED) ...in this case, a Mr. Hanson....

Phone rings, Hanson excuses himself
and carries on phone conversation.

KEN: I was told he'd finished Junior College only two years ago. He came straight to the bank and, because he did his job so well, he has already achieved a very respectable position.

HANSON: (ON PHONE) Mrs. Craft, if your son is 18 years old, he will not be able to borrow the money. That's correct, but you could borrow it in your name. That's quite all right. Goodbye. (TO GROVER - TAKING OUT FILE, ETC.) Well, Mr. Grover, I've had a chance to go over this application you filed last week. You've got a good record as far as paying bills is concerned; you've always paid them on time, but let's review your immediate problem. You want an automobile loan of $450, to be paid back to us over 18 months.

GROVER: Yes. You see, I have a chance to get an advanced position in my present job, but it means a lot of out-of-town driving. It'd mean that I could make an extra $100 or more a month.

HANSON: Your present income is $400 a month?

GROVER: I could make $500 in this new position, but my old car isn't good enough.

HANSON: The one you want to buy is already four years old. By the time you've paid off the loan it would be almost six. Maybe a larger loan would help you buy a more dependable car. Also, a lower rate of interest is possible on larger loans.

GROVER: Yeah, but this car's in great shape. The guy who owns it is a friend of mine and he's been very careful with it. $600 is a good price. I could put down $150 but he wants cash so I need another $450.

HANSON: Right, well, let's see - you're 26, married, no children. You've had your present job four years. The Automobile Blue Book here shows that $600 is a fair price for the car you want.

GROVER: Nods.

HANSON: You have no home loans, no steep rent, but you do have two outstanding loans totaling $325 with a total payment of $27 a month. The new loan would cost $28 a month for 18 months. That's a total payment of $55 per month.

GROVER: Those other loans will be cleared up in a year or so.

HANSON: One rule of thumb we sometimes use is that if a person's short term total debts exceed six months of his income, it's too risky to lend him money.

GROVER: Does that mean I won't get the loan?

?

MUSICAL NOTE AND INSTRUCTIONS "NOW TURN TO PAGE 6 OF YOUR BANKING CAREERS WORKBOOK AND ANSWER THE QUESTIONS ON THE LENDING OFFICER"

GROVER: Does that mean I won't get the loan?

HANSON: You certainly qualify on all counts. Yes, you have had a stable employment record. Since you have always paid your bills on time, your credit rating is good. I agree that the price of the car you want is a fair price. Your income is a little shaky now but the new job will certainly help out. Therefore, your short-term debts will be less than six months of your salary. I had to check into these factors because it is part of my job to help people borrow money and still live within their means. We will lend you $450 but I would like to add that I am a little worried about this car you want to buy. Let me suggest this. Given your credit rating, and providing you could raise another $100 on your own, we could lend you up to $900 and give you a chance to shop for a car that would be good for several years of hard driving.

GROVER: Well, I don't know...your offer sure sounds like a good idea.

HANSON: Why not think it over for a day or so and consider this. When you borrow more you qualify for lower interest rates, and we can lend for a longer term. (FADE OUT ON CONVERSATION)

KEN: (OVER SCENE) (GROVER SMILES, SHAKES HANDS AND LEAVES) That's about how it went - the installment officer has some guidelines to follow but they don't tell him everything. He finally has to make the decision himself. (DISSOLVE TO OFFICE)

COUNSELOR: Would you have made this same decision, Ken?

KEN: I have to admit that I hadn't thought about offering the customer more than he asked for. I'd have loaned him the $450 but the idea of thinking about the car two years from now wouldn't have occurred to me.

COUNSELOR: That's where experience comes in. Well, Ken, having made the tour, what's your feeling about banking as a career?

KEN: It certainly has a lot to offer. In fact, there are so many different careers possible, that calling all of them banking doesn't seem to fit. Since banking is tied in with every other business and industry, there seems to be no end to the skills, talents and training the banks need. For instance...

SCENES - CONSTRUCTION JOB

KEN: (VO) ...some have men who specialize in evaluating construction jobs. Seems a bank may agree to a construction loan on which the first 20% is paid out when a foundation is poured, another 20% when the frame is completed, and so on. So the bank needs a man who knows banking AND construction.

SCENES - FARM SHOTS

KEN: Many banks have an Agricultural Loan Department which means that they need personnel who know the techniques of farming, the market for specific crops, the value of the equipment used -- practically everything about farming -- PLUS banking.

SCENES - UNLOADING AUTOS AT DEALERSHIP

KEN: It's no surprise to find a bank representative who's an expert in the automobile business. Banks finance more than half of all autos sold, as well as financing dealers; so somebody from the banks has to be on hand to keep track of things and to judge whether the dealer is running his business sensibly.

SCENES - DOCK SCENES SHOWING FREIGHTER UNLOADING

KEN: (VO) There are banks with international divisions - banks which finance imports and exports. So right on the docks you may find a bank representative checking on the schedule, volume, and condition of a specific shipment. It isn't difficult to find where banking begins, but where it ends...???

SCENES - BACK TO COUNSELOR'S OFFICE

KEN: ...Why, there's real estate, vault supervision, personnel, advertising, public relations, and so on - without end. Which leads me to the final problem. Suppose you DO pick banking for your career, where do you start?

COUNSELOR: Well, that takes another guided tour, of a very different kind. (TO CAMERA) If you've discovered through your responses to our problem situations that banking might be for you, the thing to do is to look into it. We have introduced you to banking but there's a great deal of information we didn't give you. This workbook can serve as your initial guide. In it, you will find the correct answers to the problem situations - and quite a few facts about banking careers. It also has a list of suggestions for those of you who want further information. One suggestion is to see your school counselor, your teacher advisor or your business education teacher. They will either have more detailed information on hand, or they'll refer you to other reliable sources. They may be able to arrange group contacts with some of your local banks. Banks are often able to supply speakers, and some banks may even be able to arrange group tours. You can write to the California Bankers Association for further information. Check your school and local library for books on the history of banking, its methods and procedures, its scope of job and career opportunities. Discuss the possibilities of a career in banking with your family, and with friends or acquaintances who may be working in a bank. These and other suggestions are listed in the last section of your workbook. Why not keep it for review and reference purposes? In any case, banking is a field not to be overlooked...especially in California. The growth of California banks has been very rapid in recent years, greatly increasing the number of job and career opportunities. After initial training, the level of salaries in banking compares very favorably with other businesses, and a growing future is predicted. (TURNS TO SPEAK TO KEN) Any comments Ken?

KEN: Well, from all I've seen and heard, I'd say banking is definitely worth looking into. It has all kinds of opportunity, and I feel somehow that, if I overlook banking, I *may* be putting a limit on my own future.

APPENDIX K

CAREERS IN BANKING

STUDENTS' WORKBOOK

SECTION I - COMPUTER PROGRAMMER

Suppose you are the Computer Programmer who must set up a program to assign the right number and type of employees to each bank for each hour of the day. You begin by observing tellers in the first of a number of banks.

A. Would you ask each teller for her general opinion of the number of transactions she makes each day and the time she thinks each one takes?
____ Yes ____ No

B. Would you give each teller a tally sheet (or check list) on which she can check off the type of transactions she performs during each half hour of the day?
____ Yes ____ No

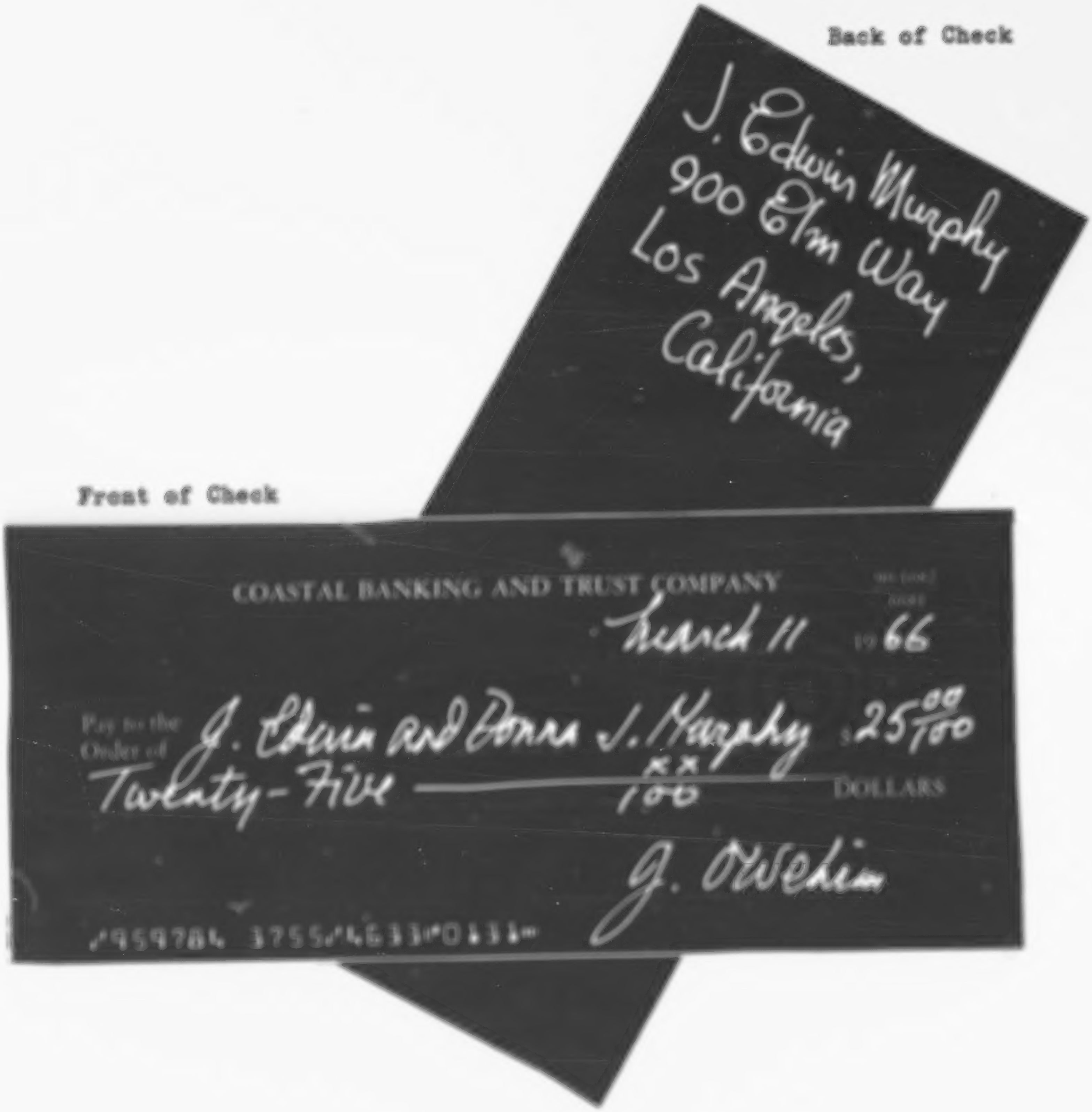
C. Would each type of transaction take the same time to perform?
____ Yes ____ No

D. Would you have enough information if you observed tellers for just one day in each bank?
____ Yes ____ No

E. Would you need observations during the midweek days (Tuesdays and Wednesdays) when banks are usually not as busy?
____ Yes ____ No

F. Would it make any difference to your observations at a bank if you knew that neighborhood businesses paid their employees on a certain day?
____ Yes ____ No

SECTION II - TELLER



Back of Check

J. Edwin Murphy
900 Elm Way
Los Angeles,
California

Front of Check

COASTAL BANKING AND TRUST COMPANY

March 11 19 66

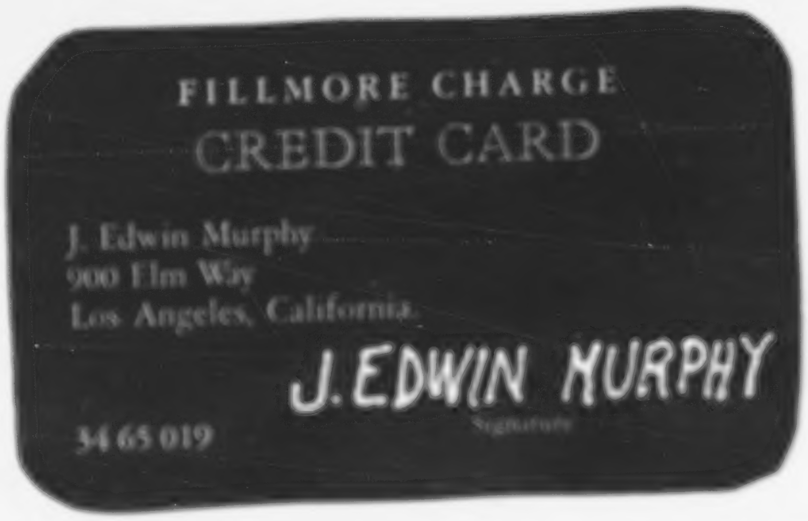
Pay to the Order of J. Edwin and Donna J. Murphy $ 25 00/100

Twenty-Five ——— xx/100 DOLLARS

J. Olwehim

959784 3755 4633 0131

Section II - continued



FILLMORE CHARGE
CREDIT CARD

J. Edwin Murphy
900 Elm Way
Los Angeles, California

J. EDWIN MURPHY
Signature

34 65 019

A. Look at the front and back of the check. Does the signature on the back match the names on the front? ____ Yes ____ No

B. Continue looking at the check. Is it all right that the date of the check is earlier than today's date? ____ Yes ____ No

C. Look at the credit card and the back of the check. Do the addresses on the card and the check match? ____ Yes ____ No

D. Continue looking at the check and credit card. Does the signature on the back of the check match the signature on the credit card? ____ Yes ____ No

E. Now, would you cash Mr. Murphy's check? ____ Yes ____ No

F. Would you have asked Mr. Murphy to see a "Platform Officer", using this technical term, just as the teller in the film did? ____ Yes ____ No

SECTION III - TRUST OFFICER

Suppose you are the Trust Officer and you are faced with Don's request for a large increase in his monthly allowance.

A. Does Don's desire to go on into law school indicate that he is a good student and could win a scholarship?

____ Yes ____ No

B. Does Don's desire to go on into law school indicate that he may need more money from the trust agreement at that time than he needs now?

____ Yes ____ No

C. Is is really necessary that you receive the approval of the Trust Committee for any changes you and Don wish to make in this trust agreement?

____ Yes ____ No

D. Which solution to his problem do you think Don should adopt?

1. Leave school and work until his wife can return to work?

____ Yes ____ No

2. Receive a large increase in monthly allowance as soon as possible?

____ Yes ____ No

3. Take a part-time job and receive a small increase in allowance while he continues his schooling?

____ Yes ____ No

SECTION IV - OPERATIONS OFFICER

Suppose you are the Operations Officer who wants to help the Account Clerk remedy the problems she is having. She asks questions about routine operations and has had to work overtime quite frequently in the past month.

A. Does it seem to you that the Account Clerk has the necessary training for this job? _____ Yes _____ No

B. Does it appear that the Account Clerk is organized in her work and using the skills she has been taught? _____ Yes _____ No

C. In order to learn more about the Account Clerk's work habits, would you get the opinions of her fellow employees concerning her work attitudes and behavior? _____ Yes _____ No

D. In order to learn more about the Account Clerk's work habits, would you try to observe her to find out how she performs? _____ Yes _____ No

E. If you found the Account Clerk's problem, would you change her to another job immediately and ask her to study a book describing her job? _____ Yes _____ No

F. If you found the Account Clerk's problem, would you spend time with her analyzing it, demonstrating how to remedy it, and helping her to solve it properly? _____ Yes _____ No

SECTION V - LENDING OFFICER

Suppose you are the Lending Officer and you must decide whether or not to grant the customer the short-term loan of $450 which he requests.

A. He has been working at his job for four years. Does it seem to you that he has a stable employment record?

____ Yes ____ No

B. Does it appear that the customer is paying a fair price for the car he wishes to buy?

____ Yes ____ No

C. Does he have a record of paying his bills on time?

____ Yes ____ No

D. His present income is $400 a month and he can make $500 a month in the new position. His short-term debts add up to $325. Does the total of his short-term debts exceed six months of his present salary?

____ Yes ____ No

E. Now, remember that you must lend money only if you are reasonably sure that it will be repaid. Would you lend him $450?

____ Yes ____ No

F. Would you offer to lend him more than $450 if he needed it?

____ Yes ____ No

APPENDIX L

CELL MEANS FOR EACH CRITERIA
IN EACH EXPERIMENTAL DESIGN

Table L-1	Cell Means for 7 Levels of Treatment, 2 Levels of School, and 2 Levels of Sex.
Table L-2	Cell Means for 2 Levels of Treatment (Experimental vs. Control), 2 Levels of School, and 2 Levels of Sex.
Table L-3	Cell Means for 2 Levels of Treatment (Active vs. Passive Film Participation), 2 Levels of School, and 2 Levels of Sex.
Table L-4	Cell Means for 2 Levels of Treatment (Overt vs. Covert Film Participation), 2 Levels of School, and 2 Levels of Sex.

TABLE L-1

CELL MEANS FOR 7 LEVELS OF TREATMENT, 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	E_1				E_2				E_3				C_1				C_2				C_3				C_4			
	Middle-Class		Lower-Class		Middle-Class		Lower-Class		Middle-Class		Lower-Class		Middle-Class		Lower-Class		Middle-Class		Lower-Class		Middle-Class		Lower-Class		Middle-Class		Lower-Class	
	Females n=10	Males n=10	Females n=10	Males n=5	Females n=10	Males n=10	Females n=10	Males n=9	Females n=10	Males n=10	Females n=7	Males n=10	Females n=10	Males n=10	Females n=9	Males n=10	Females n=10	Males n=10	Females n=9	Males n=10	Females n=9	Males n=10	Females n=10	Males n=5	Females n=10	Males n=10	Females n=10	Males n=9
Occupational Information (O.I.I.)	.50	.60	1.00	1.00	.70	.50	.50	.22	-.10	.30	-.14	.30	-.20	.20	.11	.30	.30	.40	.33	-.10	0	-.10	-.30	0	-.40	.40	.50	-.11
Occupational Interests (O.I.S.I.)																												
Bus. Management	-1.30	.40	-.40	2.00	.50	-.20	-.80	-.11	-2.20	-4.50	1.71	.70	-1.80	-2.10	-.55	.40	-2.10	-1.20	1.22	2.40	1.00	-2.40	.60	-4.40	.30	-1.40	-.10	-1.44
Computation	.10	.20	-.80	5.00	.60	-1.30	2.20	1.66	.10	-3.70	.14	2.40	-3.50	-2.10	-.33	1.40	-1.00	0	1.66	2.40	-2.00	1.10	1.00	-.40	.80	-.40	-1.00	-1.60
Office	1.40	-.60	.30	3.20	-1.20	-.80	1.10	.11	-.70	-3.40	-.72	2.00	-1.10	-1.70	-2.10	1.40	-.40	0	.11	.80	-1.66	-1.30	-1.60	-3.80	.10	.10	2.30	1.56
[illegible]	.30	.10	.70	.80	.20	.10	.70	-.11	-.10	-.90	-.29	0	-.20	-.10	-.44	-.50	-.30	-1.10	.66	.50	.10	-.30	.10	-1.40	-.20	-.50	.10	-.10
Bank Teller	-.20	.40	.20	1.00	-.10	-.30	.40	.11	-.30	-.70	-.43	-.10	-.30	0	.11	.20	0	-.40	.77	.10	-.40	0	0	.40	-.30	-.20	.10	-.10
Banking Attitudes (B.A.S.)	2.30	1.30	1.20	7.00	.30	3.27	-.70	-1.89	3.00	-.60	1.00	2.00	1.80	0	1.22	1.20	1.40	-.90	-.55	2.20	0	-3.50	0	-.60	-3.40	-.10	-2.70	-2.11
	n=10	n=10	n=10	n=6	n=10	n=10	n=10	n=10	n=10	n=10	n=10	n=10	n=10	n=10	n=9	n=10	n=10	n=10	n=10	n=10	n=9	n=10	n=10	n=6	n=10	n=10	n=10	n=10
Exploratory Activities (E.A.S.I.)	2.30	1.30	3.30	2.83	2.50	1.70	2.90	2.10	2.90	1.80	2.60	2.60	4.90	2.30	2.67	2.60	2.70	2.00	2.80	2.20	1.22	1.20	2.10	3.33	3.20	2.00	3.40	2.20
Student Reactions (S.R.S.)																												
#1 - Interest in Materials	3.80	3.30	4.30	4.00	3.60	3.50	4.20	3.80	3.80	3.70	4.10	4.10	3.60	3.00	3.89	3.70	3.10	2.80	4.20	4.00	3.56	3.80	4.60	4.33	1.40	2.10	2.00	2.70
#2 - Evaluation of Materials	4.10	3.30	4.40	4.67	3.10	3.50	4.30	4.20	3.70	3.60	3.90	4.20	3.10	3.10	3.89	3.30	3.80	3.80	4.10	3.80	3.44	3.60	4.30	4.17	2.60	2.30	3.10	2.40
#3 - Anticipated Exploration	3.30	2.90	4.20	4.30	3.10	3.10	3.80	3.60	3.00	3.00	3.40	3.80	3.30	3.00	3.44	3.40	3.40	3.10	4.20	3.60	3.33	3.80	4.20	4.00	1.80	1.40	2.30	2.80

NOTE: Treatment conditions E_1, E_2, and E_3 were the action-overt, action-covert, and passive participation films respectively. C_1 and C_2 were the regular banking-career and filler films, while conditions C_3 and C_4 were the printed banking-career and printed general-career information groups.

TABLE L-2

CELL MEANS FOR 2 LEVELS OF TREATMENT (EXPERIMENTAL vs. CONTROL), 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	EXPERIMENTAL TREATMENTS				CONTROL TREATMENTS			
	Middle-Class School		Lower-Class School		Middle-Class School		Lower-Class School	
	Females n=30	Males n=30	Females n=27	Males n=24	Females n=39	Males n=40	Females n=38	Males n=34
Expressed Interests (J.I.L.)	.47	.47	.52	.38	-.07	.17	.16	.03
Inventoried Interests (P.T.I.I.)								
Bus. Management	-1.00	-1.67	-.04	.70	-.69	-1.77	.29	-.20
Computation	.27	-1.60	.55	2.67	-1.41	-.35	.32	.77
Office	-.17	-1.60	.33	1.54	-.72	-.72	-.29	.50
Banker	.33	-.23	.45	.12	-.15	-.47	.13	-.24
Bank Teller	-.20	-.20	.11	.21	-.23	-.15	.24	0
Banking Attitudes (B.A.Q.)	1.90	2.03	.45	1.58	-.05	-1.12	-.55	1.47
	n=30	n=30	n=30	n=26	n=39	n=40	n=39	n=36
Exploratory Activities (V.E.B.I.)	2.57	1.67	3.67	2.46	3.05	1.88	2.74	2.50
Student Reactions (S.R.S.)								
#1 - Interest in Materials	3.73	3.50	4.26	3.96	2.90	2.93	3.67	3.61
#2 - Evaluation of Materials	3.63	3.67	4.20	4.31	3.23	3.20	3.85	3.33
#3 - Anticipated Exploration	3.20	3.00	3.80	3.88	2.95	2.83	3.54	3.38

NOTE: Dependent variables 1 through 7 were administered on a pretest and posttest basis to a total of 262 Ss. Means listed represent average change scores.
Dependent variables 8 through 11 were administered on a post-treatment basis to 270 Ss.

TABLE L-3

CELL MEANS FOR 2 LEVELS OF TREATMENT (ACTIVE vs. PASSIVE FILM PARTICIPATION), 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	ACTIVE-PARTICIPATION FILMS				PASSIVE-PARTICIPATION FILM			
	Middle-Class School		Lower-Class School		Middle-Class School		Lower-Class School	
	Females n=20	Males n=20	Females n=20	Males n=14	Females n=10	Males n=10	Females n=7	Males n=10
Expressed Interests (J.I.L.)	.75	.55	.75	.50	-.10	.30	-.14	.20
Inventoried Interests (P.T.I.I.)								
Bus. Management	-.40	-.25	-.65	.89	-2.20	-4.50	1.71	.70
Computation	.35	-.55	.70	2.86	.10	-3.70	.14	2.40
Office	.10	-.70	.70	1.21	-.70	-3.40	-.71	2.00
Banker	.55	.10	.70	.21	-.10	-.90	-.29	0
Bank Teller	-.15	.05	.30	.43	-.30	-.70	-.43	-.10
Banking Attitudes (B.A.Q.)	1.30	3.35	.25	1.29	3.00	-.60	1.00	2.00
	n=20	n=20	n=20	n=16	n=10	n=10	n=10	n=10
Exploratory Activities (V.E.B.I.)	2.40	1.60	4.20	2.38	2.90	1.80	2.60	2.60
Student Reactions (S.R.S.)								
#1 - Interest in Materials	3.70	3.40	4.35	3.88	3.80	3.70	4.10	4.10
#2 - Evaluation of Materials	3.60	3.70	4.35	4.38	3.70	3.60	3.90	4.20
#3 - Anticipated Exploration	3.30	3.00	4.00	3.94	3.00	3.00	3.40	3.80

NOTE: Dependent variables 1 through 7 were administered on a pretest and posttest basis to a total of 262 Ss. Means listed represent average change scores.
Dependent variables 8 through 11 were administered on a post-treatment basis to 270 Ss.

TABLE L-4

CELL MEANS FOR 2 LEVELS OF TREATMENT (OVERT vs. COVERT FILM PARTICIPATION), 2 LEVELS OF SCHOOL, AND 2 LEVELS OF SEX

Variables	ACTIVE-OVERT PARTICIPATION FILM				ACTIVE-COVERT PARTICIPATION FILM			
	Middle-Class School		Lower-Class School		Middle-Class School		Lower-Class School	
	Females n=10	Males n=10	Females n=10	Males n=5	Females n=10	Males n=10	Females n=10	Males n=9
Expressed Interests (J.I.L.)	.80	.60	1.00	1.00	.70	.50	.50	.22
Inventoried Interests (P.T.I.I.)								
Bus. Management	-1.30	.40	-.40	.80	.50	-.90	-.90	-.11
Computation	.10	.20	-.80	5.00	.60	-1.30	2.20	1.67
Office	1.40	-.60	.30	3.20	-1.20	-.80	1.10	.11
Banker	.90	.10	.70	.80	.20	.10	.70	-.11
Bank Teller	-.20	.40	.20	1.00	-.10	-.30	.40	.11
Banking Attitudes (B.A.Q.)	2.30	1.50	1.20	7.00	.30	5.20	-.70	-1.89
	n=10	n=10	n=10	n=6	n=10	n=10	n=10	n=10
Exploratory Activities (V.E.B.I.)	2.30	1.50	5.50	2.83	2.50	1.70	2.90	2.10
Student Reactions (S.R.S.)								
#1 - Interest in Materials	3.80	3.30	4.50	4.00	3.60	3.50	4.20	3.80
#2 - Evaluation of Materials	4.10	3.90	4.40	4.67	3.10	3.50	4.30	4.20
#3 - Anticipated Exploration	3.50	2.90	4.20	4.50	3.10	3.10	3.80	3.60

NOTE: Dependent variables 1 through 7 were administered on a pretest and posttest basis to a total of 262 Ss. Means listed represent average change scores.
Dependent variables 8 through 11 were administered on a post-treatment basis to 270 Ss.